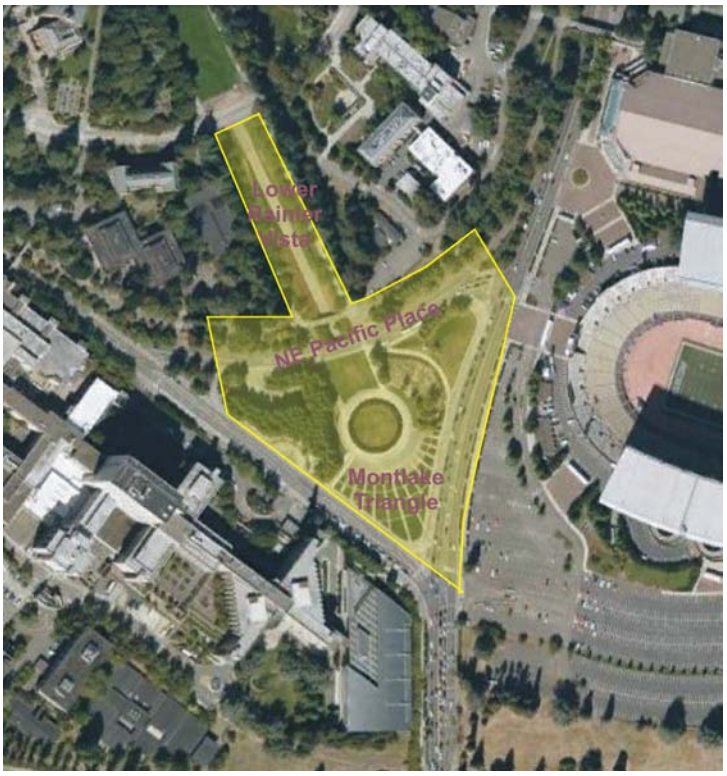
UNIVERSITY OF WASHINGTON TO SOUND TRANSIT U-LINK PEDESTRIAN CONNECTION PROJECT

EIS ADDENDUM



UNIVERSITY OF WASHINGTON
SOUND TRANSIT

January 2011

EIS Addendum

for the

University of Washington to Sound Transit U-Link Pedestrian Connection Project

University of Washington
Sound Transit

The EIS Addendum for the *University of Washington to Sound Transit U-Link Pedestrian Connection Project* has been prepared in compliance with the State Environmental Policy Act of 1971 (Chapter 43.21C, Revised Code of Washington); the SEPA Rules, effective April 4, 1984, as amended (Chapter 197-11, Washington Administrative Code); and rules adopted by the University of Washington implementing SEPA (478-324 WAC). Preparation of this EIS Addendum is the responsibility of the University's Capital Projects Office. The Capital Projects Office has determined that this document has been prepared in a responsible manner using appropriate methodology and it has directed the areas of research and analysis that were undertaken in preparation of this EIS Addendum. This document is not an authorization for an action, nor does it constitute a decision or a recommendation for an action; in its final form, it will accompany the *Proposed Action* and will be considered in making the final decisions on the proposal.

Date of EIS Addendum Issuance ..... **January 14, 2011**

FACT SHEET

PROJECT TITLE

University of Washington to Sound Transit U-Link Pedestrian Connection Project

PROPOSED ACTION

In April 2006, the *Sound Transit North Link Final Supplemental Environmental Impact Statement* (referred to herein as 2006 FSEIS) was issued by Sound Transit and the Federal Transit Administration (FTA) pursuant to the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA). Sound Transit selected the final route, profile, and station locations to be built in April 2006 (referred to herein as the 2006 Alternative). FTA issued a NEPA Record of Decision (ROD) for the project in June 2006. The Sound Transit 2006 Alternative included a station at University of Washington, on the east side of Montlake Boulevard, near Husky Stadium. As required by the mitigation commitments contained in the ROD, Sound Transit designed a grade-separated pedestrian bridge over Montlake Boulevard NE, NE Pacific Place, and the Burke-Gilman Trail. The pedestrian bridge connected the light rail station to the Montlake Triangle and to the eastern edge of Lower Rainier Vista (see the Environmental Review/Alternatives section below for additional discussion on the 2006 Alternative).

Subsequent to design of the pedestrian bridge, Sound Transit, the University of Washington and the Seattle Department of Transportation (SDOT) evaluated various options for alternative pedestrian connections between the University of Washington Station (near Husky Stadium) and Central Campus. In addition, the Washington State Legislature, through ESSB 6392, directed the Washington State Department of Transportation (WSDOT) to work with stakeholder agencies to develop transit connections in the SR-520 corridor, including improvements at the Montlake Triangle as a multimodal transit hub. Accordingly, the 2010 Proposed Action was developed jointly by Sound Transit, the University of Washington, King County Metro, WSDOT, and SDOT. These agencies worked together to evaluate various options for improving pedestrian connections between the University of Washington Station and the Central Campus area; and improvements to bus and bicycle/trail facilities at the Montlake Triangle. The 2010 Proposed Action (also referred to as the "Montlake Triangle Project") is the result of this collaboration, which revised the original project design to include an updated pedestrian and bicycle access plan and other landscape improvements to connect the University of Washington

Light Rail Station with Rainier Vista and Central Campus while also improving light rail to bus transit connections and regional multi-purpose trail connections.

The proposed pedestrian and bicycle facilities (referred to herein as 2010 Proposed Action) would connect the University of Washington Station with Rainier Vista and Central Campus and would consist of a grade-separated pedestrian and bicycle access bridge over Montlake Boulevard NE, establishment of a Rainier Vista land bridge spanning a lowered NE Pacific Place, a modified Burke-Gilman Trail, and improved bus stop and transfer facilities.

This SEPA Addendum evaluates the impacts of the 2010 Proposed Action focusing on the differences from the pedestrian connection(s) identified and analyzed in the 2006 FSEIS and subsequent final design efforts.

ENVIRONMENTAL REVIEW / ALTERNATIVES

Consistent with the SEPA Rules, WAC 197-11-600, -625, and -706, this EIS Addendum adds analysis and information to the Sound Transit, *North Link Light Rail Transit Project Final Supplemental EIS*, April 2006. The 2010 Proposed Action analyzed in this EIS Addendum reflects modifications to the 2006 Alternative described and analyzed in the 2006 FSEIS and in the final design implementing the mitigation measures identified in the 2006 NEPA ROD.

2006 Alternative – 2006 FSEIS

The 2006 Alternative analyzed in the 2006 FSEIS included an underground University of Washington Station located at the southwest corner of Husky Stadium, east of Montlake Boulevard NE and NE Pacific Street. The 2006 Alternative included a grade-separated pedestrian access (via a tunnel or bridge) across Montlake Boulevard NE. The project mitigation measures included in the 2006 NEPA ROD included a provision of grade-separated pedestrian access across (either under or over) NE Pacific Place, and the Burke-Gilman Trail to connect with the Rainier Vista corridor on the campus. Initial phases of construction of the University of Washington Station began in 2010.

2010 Proposed Action (Subject of this EIS Addendum)

Under the 2010 Proposed Action, the majority of the University of Washington Station design elements would remain the same as those analyzed for the 2006 Alternative. The 2010 Proposed Action would implement

the grade-separated crossing of Montlake Boulevard NE, NE Pacific Place and the Burke-Gilman Trail evaluated in the 2006 FSEIS and ROD with the following:

- An approximately 30- to 34-foot wide, 95-foot long pedestrian and bicycle access bridge over Montlake Boulevard NE that would connect the University of Washington Station to the Montlake Triangle. Stairs and an elevator would connect the bridge to the Montlake Triangle on the west side of Montlake Boulevard NE. A bicycle ramp would provide access to the bridge from the University of Washington Station and side-by-side at-grade paths would also be provided for bicycles and pedestrians.

- Improvements to the Montlake Triangle including: new landscaping and pedestrian and bicycle facilities to connect the University of Washington Station with Rainier Vista and Central Campus; provisions to enhance the Montlake Triangle as an entry to campus; and, new pathways to bus transfers on the Montlake Triangle. Bus stops along the Montlake Triangle would also be improved, including an existing west-bound bus stop along NE Pacific Street, a south-bound bus stop along Montlake Boulevard NE and, an east-bound bus stop on NE Pacific Place.

- An approximately 35- to 100-foot wide landscaped land bridge over a lowered NE Pacific Place and a modified Burke-Gilman Trail. NE Pacific Place would be lowered approximately 20 feet. The Burke-Gilman Trail in the vicinity of the land bridge would be improved to grade-separate the Burke-Gilman Trail from Rainier Vista (the trail would travel under the proposed land bridge). Through the project area, the Burke-Gilman Trail would be widened to provide a 14-foot wide pedestrian and bicycle path. Two-foot wide gravel shoulders would be provided at the edges of the path. Design of the trail would not preclude future widening by the University for a total trail width of 30 feet. Two connecting paths would be provided linking the Burke-Gilman Trail with Rainier Vista to provide access to Central Campus.

- Filling of the existing depressed roadway area within Lower Rainier Vista with construction spoils associated with the 2010 Proposed Action (if spoils meet suitable criteria).

- Provision of new ADA accessible pathways to accommodate pedestrians along the Montlake Triangle and Rainier Vista to Central Campus.

Construction of the 2010 Proposed Action is anticipated to be completed in two year-long phases, the first beginning in mid-2012 and the second beginning in the 1st quarter of 2014.

LOCATION

The 2010 Proposed Action site is located in the south central portion of the University of Washington campus and is directly west of the Sound Transit University of Washington Station site (across Montlake Boulevard NE). The site is generally bounded by Montlake Boulevard NE to the east, NE Pacific Street to the south and west, and Stevens Way to the north.

PROPONENT/SEPA LEAD AGENCY

The University of Washington and Sound Transit are co-lead agencies for the State Environmental Policy Act (SEPA) review process. The University of Washington is the nominal lead agency under the SEPA Rules per WAC 197-11-944.

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PERMITS AND APPROVALS

<u>Federal Agencies</u>

- Federal Transit Administration Approvals

<u>State of Washington</u>

- WSDOT Approval
- Construction Stormwater General Permit

University of Washington

- Project approval, design approval, authorization to prepare contract documents, and authorization to Call-for-Bids.

City of Seattle

- Master Use Permit
- Grading Permit
- Building Permit
- Comprehensive Drainage Control Plan and Construction Stormwater Control Plan Approval
- Right-of-Way Permit
- Street Vacation Approval
- Street Use Permit

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PREVIOUS ENVIRONMENTAL DOCUMENTS

This EIS Addendum builds upon and adds analysis and information to the following environmental documents which supplement the *Central Link Light Rail Transit Project Final Environmental Impact Statement* (Sound Transit, November 1999):

- *North Link Draft Supplemental EIS* (Sound Transit/FTA, November 2003);
- *Modified Montlake Route Addendum to the North Link Draft Supplemental EIS* (Sound Transit, February 2004);
- *North Link Draft Supplemental EIS* (Sound Transit/FTA, October 2005); and
- *North Link Final Supplemental EIS* (Sound Transit/FTA, April, 2006).

Other related environmental documents include: Sound Transit, *Final Supplemental EIS on the Regional Transit Long-Range Plan*, October 2005; FTA, *Amended Record of Decision on Initial Segment*, May 2002; Sound Transit/FTA, *Initial Segment Environmental Assessment*, March 2002; Sound Transit, *SEPA Addendum for the Initial Segment*, October 2001; PSRC, *Destination 2030: Metropolitan Transportation Plan for the Central Puget Sound Region EIS*, 2001; Sound Transit,

LOCATION OF BACKGROUND INFORMATION

Background material and supporting documents are available online at www.soundtransit.org or at the Sound Transit offices: Union Station, 401 South Jackson Street, Seattle, Washington 98104.

DATE OF EIS ADDENDUM ISSUANCE

January 14, 2011

AVAILABILITY OF THE EIS ADDENDUM

Copies of the EIS Addendum have been distributed to agencies, organizations and individuals consistent with WAC 197-11-625. Copies of the EIS Addendum are also available for review at the following locations:

Libraries

- King County Library System
- Seattle Libraries
- University of Washington Libraries
- WSDOT Library
- Washington State Library

City of Seattle Community Centers

- Montlake

City of Seattle Neighborhood Service Centers

- University District and Northeast Seattle

CD copies of this EIS Addendum are available to the general public at no charge. Persons interested in receiving a copy of the EIS Addendum on CD should contact Jan Arntz of the University of Washington Capital Projects Office at (206) 543-5200.

The EIS Addendum can be reviewed and downloaded at the University of Washington's website at: www.washington.edu or at Sound Transit's web site at: www.soundtransit.org.

A limited number of printed copies may be purchased from the University of Washington. The purchase price is $19 per copy to cover printing costs. Persons interested in purchasing a printed copy of the EIS Addendum should contact Jan Arntz of the University of Washington Capital Projects Office at (206) 543-5200.

UNIVERSITY OF WASHINGTON TO SOUND TRANSIT U-LINK PEDESTRIAN CONNECTION PROJECT EIS ADDENDUM

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Chapter 1

Description of 2010 Proposed Action and Comparison to 2006 Alternative

CHAPTER 1

DESCRIPTION OF 2010 PROPOSED ACTION AND COMPARISON TO 2006 ALTERNATIVE

Introduction

The *Sound Transit North Link Final Supplemental Environmental Impact Statement* was issued in April 2006 (referred to herein as 2006 FSEIS). The FSEIS was issued by Sound Transit and the Federal Transit Administration (FTA) pursuant to the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA). Sound Transit selected the final North Link light rail route, profile, and station locations to be built in April 2006 (referred to herein as the 2006 Alternative). FTA issued a NEPA Record of Decision (ROD)[1] for the project in June 2006. The 2006 Alternative included a station at University of Washington, on the east side of Montlake Boulevard NE, near Husky Stadium. The University of Washington Station included a grade-separated pedestrian crossing of Montlake Boulevard NE, via a tunnel or bridge, with an option for an extended tunnel or bridge across NE Pacific Place and the Burke-Gilman Trail to provide access to the Rainier Vista corridor and Central Campus.

Due to concerns about increased volumes of pedestrians crossing the Burke-Gilman Trail, Sound Transit and FTA committed to developing a grade-separated crossing of the trail and NE Pacific Place, via either a tunnel or bridge, to maintain connectivity between the University of Washington Station and the campus. This mitigation measure is contained in the NEPA ROD issued in June 2006. The ROD also commits to improvements at existing crosswalks where Montlake Boulevard NE intersects with NE Pacific Place and NE Pacific Street.

Consistent with this requirement, Sound Transit, the University of Washington and the Seattle Department of Transportation (SDOT) evaluated various options for pedestrian connections between the University of Washington Station (near Husky Stadium) and Central Campus as part of the University of Washington Station Final Design. This evaluation sought to identify pedestrian access between the station and Central Campus that would be more consistent with the *University of Washington Rainier Vista Concept Plan (June 2008)* goal for "uniting operations of the station with the Rainier Vista Corridor in a way that is legible, functional and welcoming", and "establishing an enhanced pedestrian experience and pedestrian sense of arrival."

In addition, the Washington State Legislature, through ESSB 6392, directed the Washington State Department of Transportation (WSDOT) to work with stakeholder agencies to develop transit connections in the SR-520 corridor, including improvements at the Montlake Triangle as a multi-modal transit hub.

Accordingly, the 2010 Proposed Action was developed jointly by the University of Washington, Sound Transit, King County Metro, WSDOT, and SDOT. These agencies worked together to evaluate various options for improving pedestrian connections between the University of

[1] *The ROD is a document that states what the agencies' decision is; identifies the alternatives considered, including the environmentally preferred alternative; and discusses mitigation plans. (CEQ NEPA Regulations, 40 C.F.R., Section 1505.2).*

Washington Station and the Central Campus area; and improvements to bus and bicycle/trail facilities at the Montlake Triangle. The 2010 Proposed Action is the result of this collaboration, which revised the original project design to include an updated pedestrian and bicycle access plan and other landscape improvements to connect the University of Washington Station with Rainier Vista and Central Campus, while also improving regional multi-purpose trail connections.

The proposed pedestrian and bicycle facilities that would connect the University of Washington Station with Rainier Vista and Central Campus consist of a pedestrian and bicycle access bridge over Montlake Boulevard NE to the Montlake Triangle, establishment of a Rainier Vista land bridge spanning a lowered NE Pacific Place, a modified Burke-Gilman Trail, and improved bus stop/transfer facilities. This EIS Addendum evaluates the environmental impacts of the 2010 Proposed Action, focusing on differences from the pedestrian facilities identified and analyzed in the 2006 FSEIS.

The overall level of development under the 2010 Proposed Action would be similar to that under the 2006 Alternative, and the potential for environmental impacts would be similar in level and type to those identified in the 2006 FSEIS. Therefore, the 2010 Proposed Action does not substantially change the analysis of significant impacts or alternatives in the 2006 FSEIS and the 2006 FSEIS provides the basis for comparing environmental conditions.

This document is an Addendum to the Sound Transit 2006 FSEIS. Under the applicable SEPA Rules[2], an Addendum is an environmental document used to provide additional information or analysis that does not substantially change the analysis of significant impacts and alternatives in the existing environmental documents.

This chapter of the Addendum summarizes the University of Washington Station pedestrian connections described and analyzed in the 2006 FSEIS and subsequent final design efforts; describes the currently proposed pedestrian connections between the University of Washington Station and Central Campus (2010 Proposed Action); and, summarizes the scope of this EIS Addendum.

Previous Environmental Review

The North Link Final SEIS (2006 FSEIS) was issued by Sound Transit and FTA in April 2006. It supplements the Final EIS for the Central Link Light Rail Transit Project issued by Sound Transit and FTA in 1999. The 2006 FSEIS evaluated a No-Build Alternative and several "build" alternatives for a 7- to 8-mile light rail extension from downtown Seattle to Northgate, including the 2006 Alternative identified by the Sound Transit Board. The North Link project, which is a segment of the Central Link Project, would extend from the north terminus of the Initial Segment of Central Link, located at the north end of the Downtown Seattle Transit Tunnel, through Capitol Hill to the University District and on to Northgate. University Link is a segment of North Link, extending from Downtown Seattle to the University of Washington Station.

The Sound Transit Board selected the final North Link light rail route, profile, and station locations to be built in April 2006 (referred to herein as the 2006 Alternative). FTA issued a NEPA Record of Decision (ROD) for the project in June 2006, including mitigation measures, and final design followed (see **Appendix A** for an illustration of the current Sound Transit pedestrian access design).

[2] *WAC 197-11-600(4)(c), -625, and -706*

University of Washington Station – 2006 Alternative

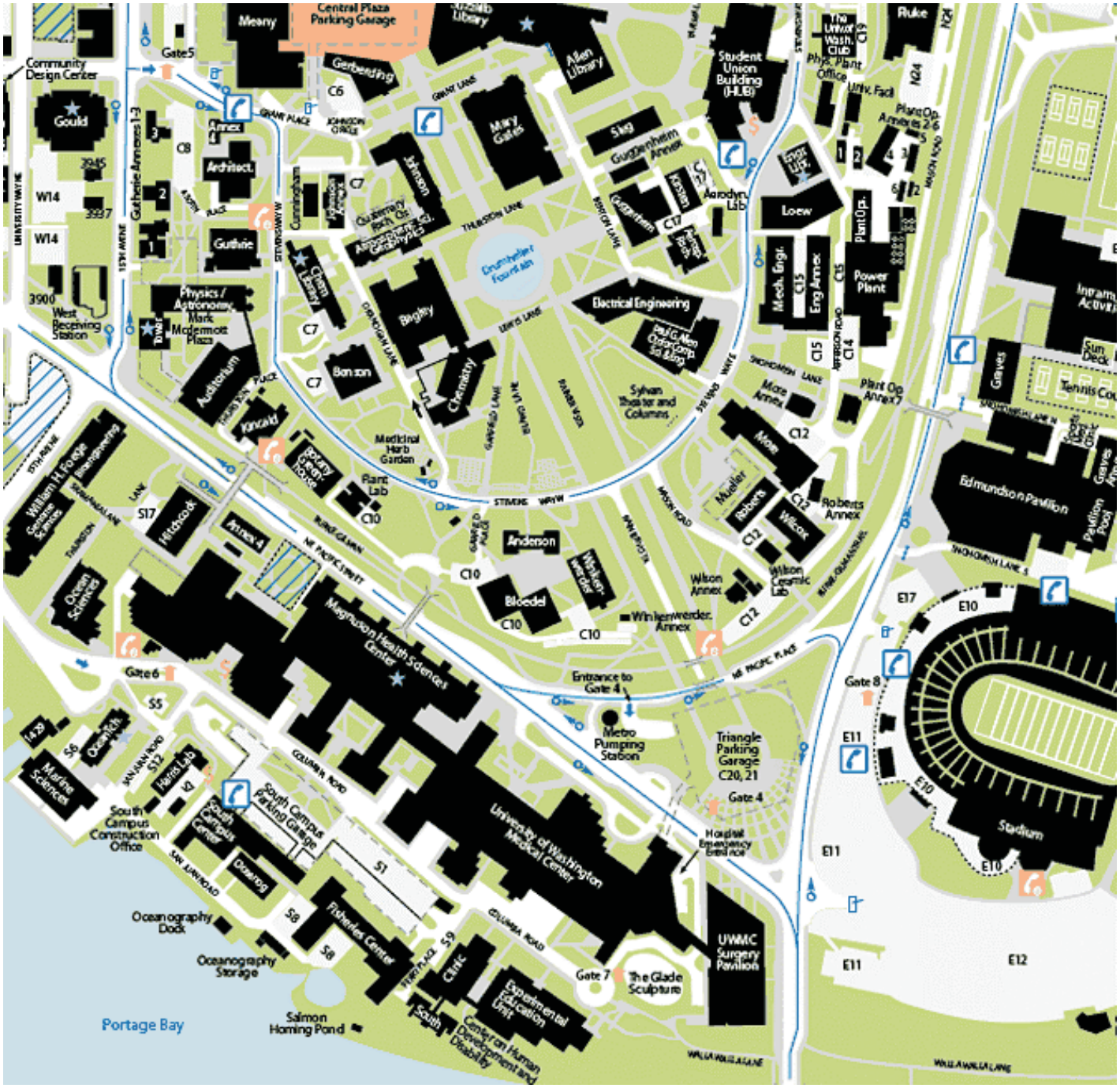
The 2006 Alternative analyzed in the 2006 FSEIS included an underground University of Washington Station located at the southwest corner of Husky Stadium, east of Montlake Boulevard NE and NE Pacific Street. The 2006 Alternative included a grade-separated pedestrian access (via a tunnel or bridge) across Montlake Boulevard NE. The project mitigation measures contained in the ROD included a provision of grade-separated pedestrian access either over or below NE Pacific Place, and the Burke-Gilman Trail to connect with the Rainier Vista corridor on the campus. Sound Transit's eventual design for pedestrian access between the University of Washington Station and Central Campus included a grade-separated pedestrian access bridge over Montlake Boulevard NE, NE Pacific Place and the Burke-Gilman Trail. The pedestrian bridge is designed to connect with the Montlake Triangle and with the eastern end of the Lower Rainier Vista at grade. This design implements the 2006 Alternative and mitigation commitments for providing pedestrian access to campus while avoiding impacts to the Burke-Gilman Trail (see **Appendix A** for an illustration of the grade-separated pedestrian access design). Initial phases of construction of the University of Washington Station began in 2010.

2010 Proposed Action

As described above, subsequent to the issuance of the 2006 FSEIS, a modified design for pedestrian access between the University of Washington Station and the Central Campus was developed (i.e., the 2010 Proposed Action). Under the 2010 Proposed Action, the majority of the University of Washington Station design elements would remain the same as those analyzed for the 2006 Alternative in the 2006 FSEIS, including the following:

- Location immediately west of Husky Stadium.
- Depth of station at approximately 110 feet below ground surface.
- Inclusion of stairs, elevators and escalators connecting the entry to the underground station.
- Provisions for crossover and storage tracks.
- Provisions for grade-separated pedestrian connections to Central Campus and to the Montlake Triangle for local transit transfers.
- Improvements to existing crosswalks and pedestrian facilities at intersections.
- Provisions for bike storage.
- Construction staging at parking lots south of Husky Stadium

The 2010 Proposed Action refines and incorporates certain modifications to the 2006 Alternative, primarily related to the pedestrian and bicycle connections between the University of Washington Station, Rainier Vista and Central Campus. For descriptive purposes, the site of the 2010 Proposed Action consists of three areas: Lower Rainier Vista; NE Pacific Place/Burke-Gilman Trail; and, Montlake Triangle/Montlake Boulevard NE (see **Figure 1-1** for a campus map of the area and **Figure 1-2** for an aerial photo illustrating the site area).



Source: *University of Washington,* 2010.

EA | BLUMEN™	**UW to Sound Transit U-Link Pedestrian Connection Project EIS Addendum**	**Figure 1-1**
		Campus Map

Source: *Blumen Consulting Group,* 2010.

- Project Site

EA | BLUMEN

UW to Sound Transit U-Link Pedestrian Connection Project
EIS Addendum

Figure 1-2

Aerial Photo

The 2010 Proposed Action would implement the grade-separated crossing of Montlake Boulevard NE, NE Pacific Place, and the Burke-Gilman Trail identified in the 2006 FSEIS and ROD with the following (See **Figures 1-3, 1-4**, **1-5** and **1-6** for illustrations of the 2010 Proposed Action):

- A pedestrian and bicycle access bridge over Montlake Boulevard NE that would connect the University of Washington Station to the Montlake Triangle, including:

    - An approximately 30- to 34-foot wide, 95-foot long bridge from the University of Washington Station over Montlake Boulevard NE to the Montlake Triangle;

    - Stairs and an elevator from the proposed bridge to the Montlake Triangle on the west side of Montlake Boulevard NE to facilitate transfers to local King County Metro bus service;

    - A bicycle ramp located between the University of Washington Station and Montlake Boulevard NE that would provide access to the bridge; and,

    - Side-by-side at-grade paths for bicycles and pedestrians located between the University of Washington Station and Montlake Boulevard NE.

- The Montlake Triangle would be improved with the following:

    - New landscaping and pedestrian/bicycle facilities to connect the University of Washington Station with Rainier Vista and Central Campus; enhance the Montlake Triangle as an entry to campus; and, provide pathways to bus transfers on the Montlake Triangle;

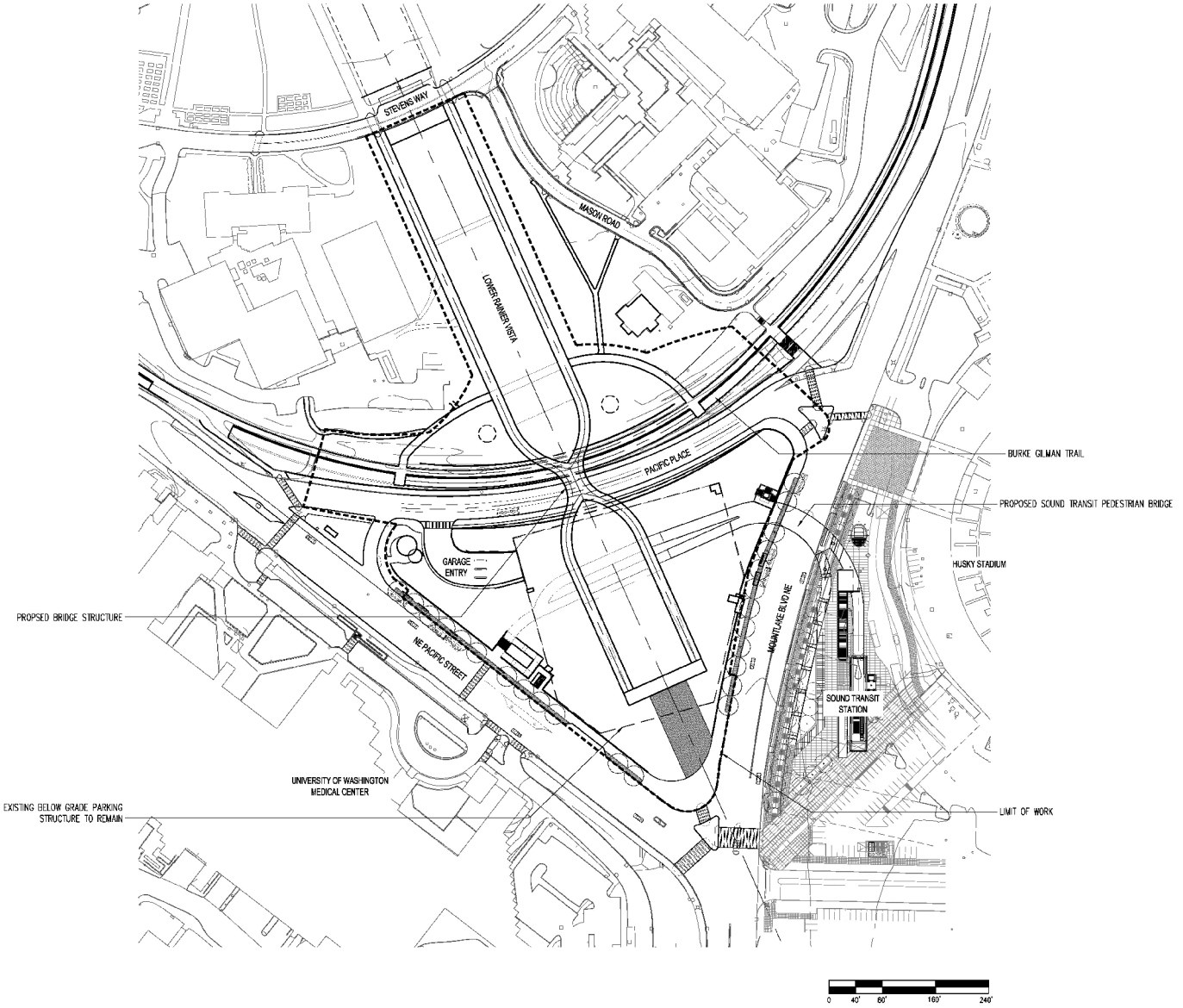
    - A relocated and improved west-bound bus stop on the Montlake Triangle along NE Pacific Street with an extended bus zone for transit coaches and shelters for riders;

    - An improved south-bound bus stop on the west side of Montlake Boulevard NE just south of NE Pacific Place; and,

    - An improved east-bound bus stop on the south side of NE Pacific Place.

- A landscaped land bridge over a lowered NE Pacific Place and a modified Burke-Gilman Trail.

    - NE Pacific Place would be lowered approximately 20 feet to allow vehicles to pass under the land bridge. All existing vehicle lanes and King County Metro transit facilities would be accommodated; and the unsignalized mid-block crosswalks eliminated. Metro transit facilities to be provided within the lowered NE Pacific Place include: expanded bus layover area, bus shelters with lighting, 35 trolley poles with overhead wires, 12 street lights, sidewalk improvements, and way-finding signage.



Source: GGN, 2010. Modified by Blumen Consulting Group, 2010.

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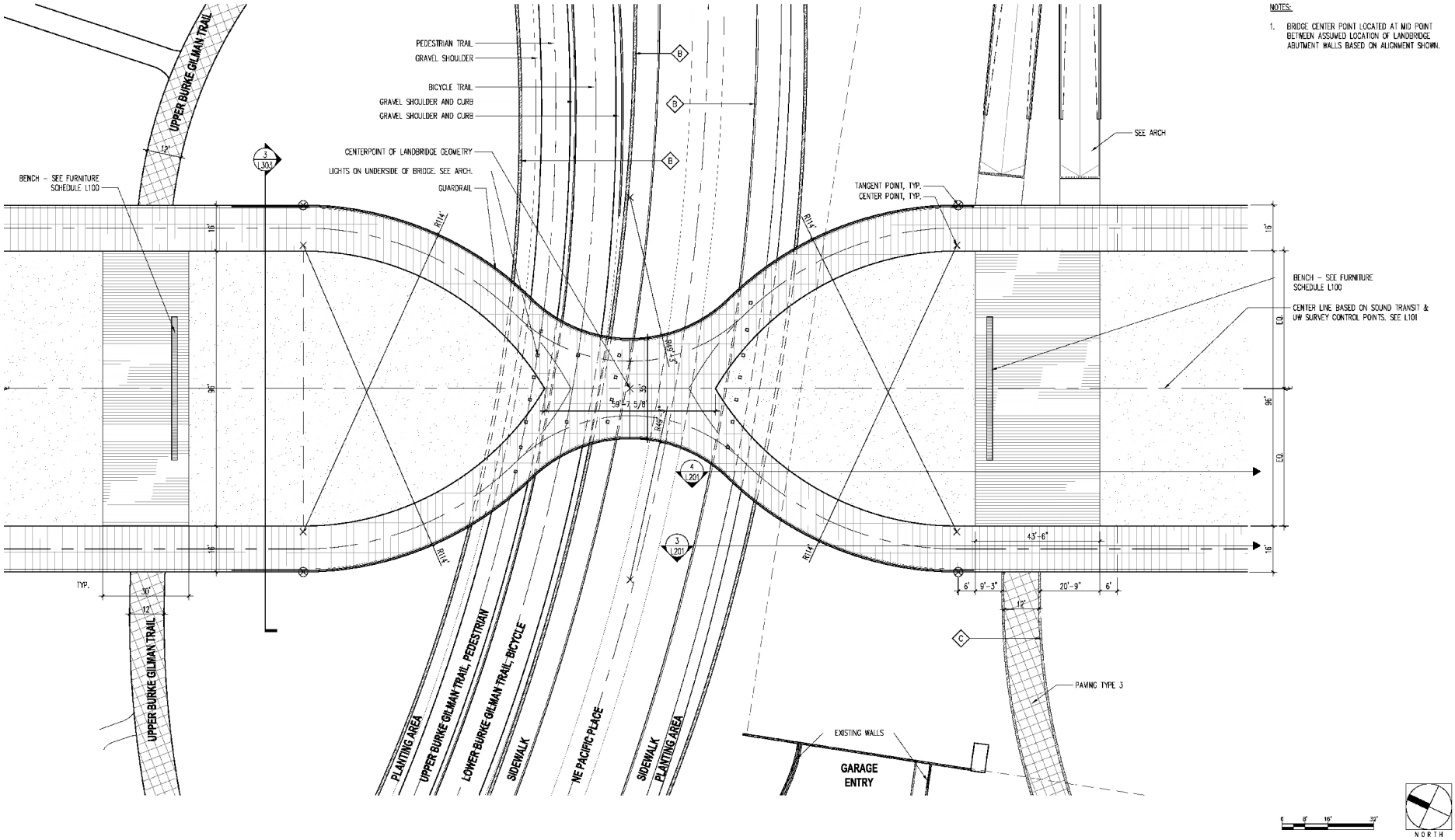
University of Washington to Sound Transit U-Link Pedestrian Connection Project EIS Addendum

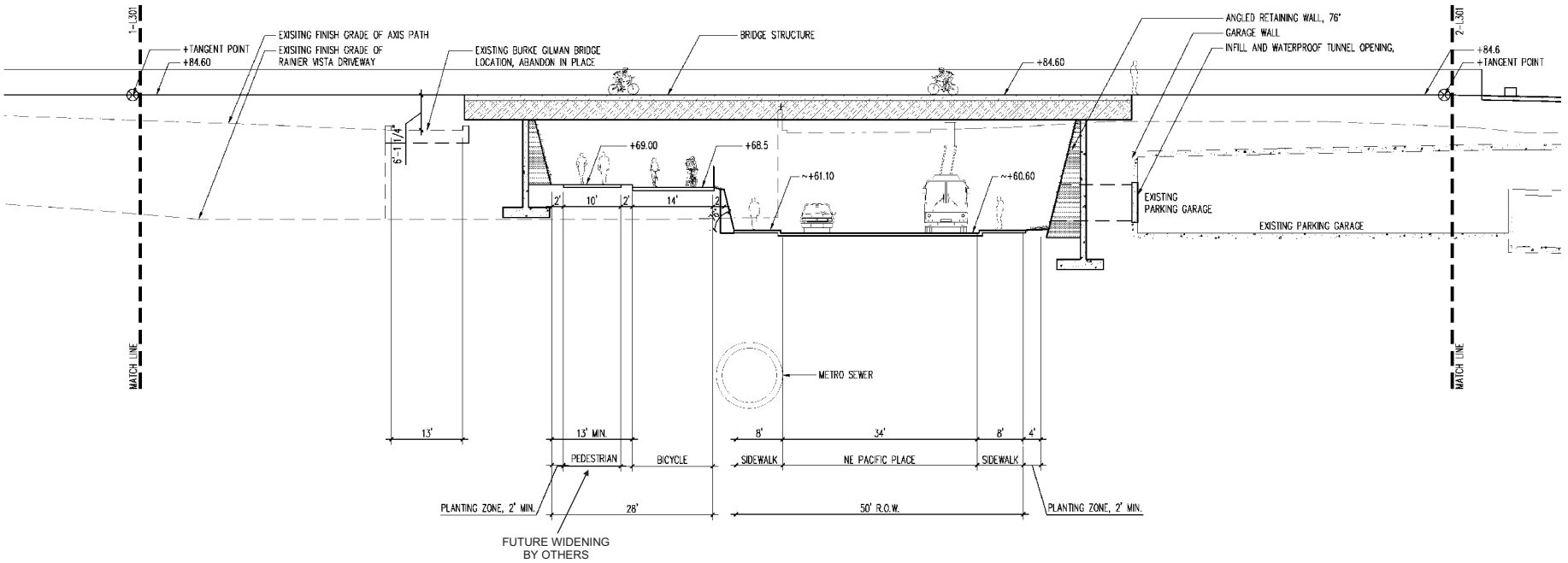
Figure 1-3

2010 Proposed Action Site Plan



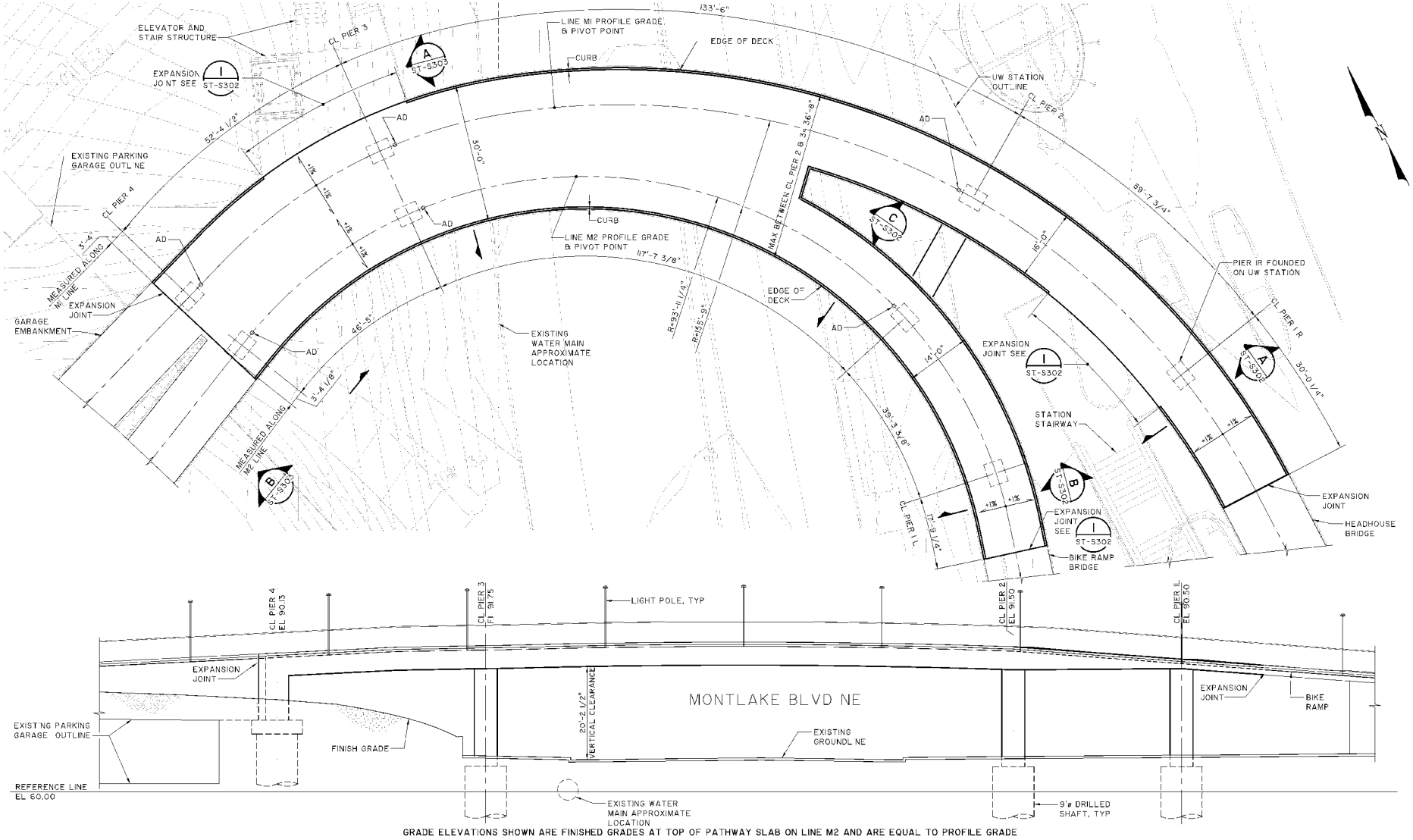
Source: *GGN,* 2010.

EA | BLUMEN	**UW to Sound Transit U-Link Pedestrian Connection Project EIS Addendum**	**Figure 1-4**
		2010 Proposed Action Land Bridge



Source: *GGN,* 2010.

EA | BLUMEN	**UW to Sound Transit U-Link Pedestrian Connection Project EIS Addendum**	**Figure 1-5**
		2010 Proposed Action Bridge Section


ELEVATOR AND STAIR STRUCTURE
EXPANSION JOINT SEE ST-S302
CL PIER 3
LINE M1 PROFILE GRADE & PIVOT POINT
EDGE OF DECK
CURB
UW STATION OUTLINE
CL PIER 2
EXISTING PARKING GARAGE OUTLINE
CL PIER 4
AD
LINE M2 PROFILE GRADE & PIVOT POINT
MAX BETWEEN CL PIER 2 & 3
CL PIER 1 R
PIER IR FOUNDED ON UW STATION
EXPANSION JOINT
GARAGE EMBANKMENT
EXISTING WATER MAIN APPROXIMATE LOCATION
EDGE OF DECK
EXPANSION JOINT SEE ST-S302
STATION STAIRWAY
HEADHOUSE BRIDGE
BIKE RAMP BRIDGE
CL PIER 1 L
CL PIER 4 EL 90.13
CL PIER 3 FT 91.75
LIGHT POLE, TYP
CL PIER 2 EL 91.50
CL PIER 1 L EL 90.50
EXPANSION JOINT
MONTLAKE BLVD NE
VERTICAL CLEARANCE
BIKE RAMP
EXISTING PARKING GARAGE OUTLINE
FINISH GRADE
EXISTING GROUND NE
REFERENCE LINE EL 60.00
EXISTING WATER MAIN APPROXIMATE LOCATION
9'ø DRILLED SHAFT, TYP
GRADE ELEVATIONS SHOWN ARE FINISHED GRADES AT TOP OF PATHWAY SLAB ON LINE M2 AND ARE EQUAL TO PROFILE GRADE

Source: *LMN,* 2010.

EA | BLUMEN	**UW to Sound Transit U-Link Pedestrian Connection Project EIS Addendum**	**Figure 1-6** **Montlake Boulevard Pedestrian and Bicycle Bridge Plan and Elevation**

- The Burke-Gilman Trail in the vicinity of the land bridge would be improved to grade-separate the Burke-Gilman Trail from Rainier Vista. Through the project area, the Burke-Gilman Trail would be widened to provide a 14-foot wide pedestrian and bicycle path. Two-foot wide gravel shoulders would be provided at the edges of the path. Design of the trail would not preclude future widening by the University for a total trail width of 30 feet. The new trail would be constructed parallel to the lowered NE Pacific Place under the land bridge, although the elevation of the trail would be above the roadway to minimize the grades on the trail. Two connecting paths would be provided linking the Burke-Gilman Trail with Rainier Vista to provide access to Central Campus. The new trail section would transition both in grade and alignment to meet the existing trail section east and west of the Montlake Triangle (near the NE Pacific Place/NE Pacific Street intersection on the west and the NE Pacific Place/Montlake Boulevard NE intersection on the east) (see **Figure 1-4**).

- The land bridge would be hour glass shaped to minimize the width of the land bridge over NE Pacific Place and the Burke-Gilman Trail, with the width of the land bridge ranging from approximately 35 feet in the center to approximately 100 feet at the north and south ends (see **Figure 1-4**).

- Improvements to the Lower Rainier Vista to enhance pedestrian connections between the University of Washington Station and the Central Campus.

  - Filling of the existing Rainier Vista depression located immediately north of NE Pacific Place with construction spoils associated with the lowering of NE Pacific Place and/or construction of the University of Washington Station. The filling of this depression is intended to provide a larger and more welcoming pedestrian environment.

  - Removal of the existing cherry trees[3] in the Lower Rainier Vista to eliminate the confinement and partial view blockage they produce.

  - Provision of new landscaping and pedestrian paths.

- Provision of new ADA accessible pathways to accommodate pedestrians along the Montlake Triangle and Rainier Vista to Central Campus.

With the pedestrian improvements under the 2010 Proposed Action, a pedestrian exiting the University of Washington Station wishing to walk to Central Campus would cross Montlake Boulevard NE via the pedestrian bridge to the Montlake Triangle, travel north along the pedestrian paths within the Triangle, cross NE Pacific Place via the landscaped land bridge, and travel along the Rainier Vista pedestrian paths to Central Campus.

Major construction elements of the 2010 Proposed Action (i.e. pedestrian/bicycle access bridge and ramp; lowering of NE Pacific Place; and land bridge) would be managed by Sound Transit

[3] *These cherry trees were damaged by December 2008 storms. See **Appendix B** for further details on the tree inventory and assessment.*

so that all development and construction-related activities can be coordinated with the on-going construction of the University of Washington Station.

The proposed pedestrian improvements would be compatible with, and would not preclude, future development projects in the area, including improvements to SR-520 and Husky Stadium.

Scope of EIS Addendum

As described above, the majority of the University of Washington Station elements under the 2010 Proposed Action are similar to those described and analyzed for the University of Washington Station in the 2006 FSEIS. Similar to the 2006 FSEIS, the 2010 Proposed Action includes the same overall station design, station location, station depth, above grade entrances and stairs/elevators/escalators, crossover tracks, bike storage and construction staging areas. The 2010 Proposed Action refines the grade-separated pedestrian connection between the University of Washington Station and Central Campus described in the 2006 FSEIS (refer to **Appendix A** for an illustration of the current Sound Transit pedestrian access design) and implements relevant ROD mitigation requirements. Based on these design refinements, the 2010 Proposed Action would not change the following environmental analyses in the 2006 North LINK Final SEIS:

- Acquisitions/Displacements/Relocation
- Air Quality
- Noise and Vibration
- Land Use/Economic Activity
- Ecosystems
- Water Resources
- Energy
- Hazardous Materials
- Electromagnetic Fields
- Public Services
- Utilities
- Neighborhoods and Populations
- Historic and Archaeological Resources[4]
- Geology and Soils

This EIS Addendum provides an updated environmental analysis for those environmental elements that have potential to change as a result of the 2010 Proposed Action. The following environmental elements are addressed in this EIS Addendum:

- Transportation
- Visual Resources/Aesthetics
- Parklands
- Construction Impacts
- Cumulative Effects

For each of the elements of the environment listed above, the following is provided in Chapter 2 of this Addendum: a description of existing conditions; a brief summary of environmental impacts indentified in the 2006 FSEIS; a description of the potential for environmental impacts that could occur under the 2010 Proposed Action; any new or refined mitigation measures for the 2010 Proposed Action beyond those identified for the 2006 Alternative.

[4] *Please note that in February 2003, the Washington State Office of Archaeology and Historic Preservation concurred that "the Rainier Vista is NOT ELIGIBLE individually for the National Register of Historic Places due to its low level of integrity. Additionally, it appears that Rainier Vista is also NOT ELIGIBLE for the National Register as part of an historic district due to the lack of concentration of significant historic resources within the defined Area of Potential Effect (APE)".*

Chapter 2

Comparison of Environmental Impacts

2.1 TRANSPORTATION

This section of the EIS Addendum is based on the Technical Memorandum prepared by Heffron Transportation. Refer to **Appendix C** for detailed traffic and pedestrian analyses of the 2010 Proposed Action.

2.1.1 Affected Environment

The 2006 FSEIS evaluated transportation conditions and impacts, and proposed mitigation in the vicinity of the University of Washington Station near Husky Stadium. Analysis for the 2010 Proposed Action relied on most of the same background assumptions that were applied in the 2006 FSEIS. However, some changes in the future background conditions have been assumed, primarily related to changes in the proposed configuration of the SR 520 Bridge Replacement Project and access to the Husky Stadium parking lot on the east side of Montlake Boulevard. The following table summarizes the key background transportation assumptions used for this analysis and notes how conditions have changed since the 2006 FSEIS was prepared.

2006 FSEIS	2010 Proposed Action
• Sound Transit boardings at the University of Washington Station assumed to be 13,000 per day in 2015 and 21,500 per day in 2030. If the UW Station is the interim terminus for University Link, then the daily boardings for year 2030 could be 27,000 per day.	• No change from 2006 FSEIS.
• The net increase in PM peak hour vehicle trips generated by the University of Washington Station was assumed to be 242 trips, which includes 150 drop-off/pick-up trips plus 92 additional bus trips.	• No change from 2006 FSEIS.
• Intersections that were evaluated in the vicinity of the University of Washington Station include: 1. Montlake Boulevard NE/NE Pacific Street 2. Montlake Boulevard NE/NE Pacific Place 3. NE Pacific Street/NE Pacific Place	• No change from 2006 FSEIS.

2006 FSEIS	2010 Proposed Action
• Year 2030 traffic volume forecasts assumed that no changes would occur to the SR 520 Bridge, and it would remain in its existing configuration. The prior long-range forecasts did not include other major regional projects such as East Link (light rail to Bellevue via I-90).	• Year 2030 traffic volume forecasts are from the new SR 520 Bridge Replacement Project SDEIS (WSDOT, January 2010), and assume the No Build Condition and Alternative A configuration, which includes the SR 520 interchange at Montlake Boulevard and a second bascule bridge across the Ship Canal. The WSDOT forecasts also account for the East Link project to extend light rail service to Bellevue via I-90.
• The 2006 FSEIS had assumed a substantial increase in traffic entering and exiting the parking lot driveway at Pacific Place (serving the E-11/E-12 lots near Husky Stadium). A 66% increase in traffic had been assumed between the 2002 and 2030 No Action condition.	• The University of Washington has no plans to increase the number of parking spaces in these parking lots, and traffic entering and exiting the parking lots would not change in the future compared to existing conditions. Year 2030 forecasts from the SR 520 SDEIS were used for the through traffic on Montlake Boulevard and NE Pacific Place.
• Intersection operations analysis assumed no changes to the existing roadway network in the vicinity of the University of Washington station.	• Changes to the existing roadway network were assumed to account for changes in the Husky Stadium parking lot driveway, which will become the east leg of the Montlake Boulevard/Pacific Street intersection. Changes associated with SR 520 Option A were also evaluated.

2.1.2 Impacts

This transportation analysis presents detailed information on the 2010 Proposed Action which would refine and incorporate certain modifications to the 2006 Alternative. The proposed pedestrian and bicycle facilities that would connect the University of Washington Station and Central Campus consist of a pedestrian and bicycle access bridge over Montlake Boulevard NE that would connect the University of Washington Station with the Montlake Triangle, establishment of a Rainier Vista land bridge spanning a lowered NE Pacific Place, a modified Burke-Gilman Trail, and improved bus stop/transfer facilities.

Traffic Operations

The 2006 FSEIS had determined that the Montlake Boulevard NE/NE Pacific Place intersection would operate at LOS F in the future, and had recommended adding a second left turn lane to

the intersection to mitigate this condition. However, that poor level of service was related to the fact that the analysis had assumed traffic exiting the Husky Stadium parking lots would increase by 66% by the year 2030. The University of Washington has no plans to increase the number of parking spaces in its E-11 or E-12 lots served by this driveway. Therefore, traffic volumes are not likely to increase in the future. The proposed mitigation measure would not be needed for the 2006 Alternative or the 2010 Proposed Action.

The development of the 2010 Proposed Action would not affect the number of trips or passengers generated by the University of Washington Station, nor would it affect traffic patterns in the site vicinity. The 2010 Proposed Action would not create any additional traffic operational impacts and no new or additional mitigation would be needed to accommodate the 2010 Proposed Action. Refer to **Appendix C** for further details on traffic operations under the 2010 Proposed Action.

Non-Motorized Access

Pedestrian Bridge

The 2006 Alternative proposed a 16-foot wide pedestrian bridge that would extend approximately 670 feet between the University of Washington station and Rainier Vista, with elevator and stairway access from the bridge deck to the Montlake Triangle. The 2010 Proposed Action would replace that bridge with a 30- to 34-foot wide bridge that spans 95-feet from the station to the Montlake Triangle.

The peak one-minute surge volumes exiting and entering the University of Washington station during the morning commute were evaluated. The station would generate a peak surge of 218 passengers per minute exiting the station and 21 passengers per minute entering the station during this period. Under the 2006 Alternative, an estimated 66 percent of these passengers (158 per minute) were expected to use the pedestrian bridge to Rainier Vista. Under the 2010 Proposed Action, an estimated 70 percent (168 per minute) are expected to use the pedestrian bridge to the Montlake Triangle.

Based on level of service (LOS) criteria, the 2006 Alternative bridge would operate at LOS D and the 2010 Proposed Action bridge would operate at LOS B. However, the 2010 Proposed Action bridge would also be connected to a bicycle ramp that would add traffic to the bridge. It is assumed that a separate bicycle path would be striped on the bridge. . The bicycle area could be 10- to 12-feet wide and the remaining bridge area that is reserved for pedestrians (18- to 20-feet) would operate at LOS C. Based on this analysis, the bridge in the 2010 Proposed Action would operate at a better level of service and provide a better facility for bicycles than the 2006 Alternative. Refer to **Appendix C** for further details on the pedestrian bridge.

Pedestrian Travel Times

Pedestrian travel times from the University of Washington station were evaluated for the 2006 Alternative bridge and the 2010 Proposed Action bridge. Walking times under the 2010 Proposed Action would be similar to those under the 2006 Alternative (refer to **Appendix C** for detail on pedestrian travel times).

Burke-Gilman Trail

Detailed analysis was also performed to determine potential impacts to the Burke-Gilman Trail. Under the 2010 Proposed Action, the Burke-Gilman Trail in the vicinity of the land bridge would be improved to grade-separate the Burke-Gilman Trail from Rainier Vista. Through the project area, the Burke-Gilman Trail would be widened to provide a 14-foot wide pedestrian and bicycle path and two-foot wide gravel shoulders would be provided at the edges of the path. The design of the trail would not preclude future widening of the trail by the University of Washington to a total trail width of 30-feet. A new trail would be constructed parallel to the new NE Pacific Place under the land bridge, although the elevation of the trail would be above the roadway to minimize the grades on the trail. Two connecting paths would be provided that would link the Burke-Gilman Trail with Rainier Vista. The University of Washington is analyzing further Burke-Gilman Trail improvements beyond this area. Until then, the new trail section would need to transition both in grade and alignment to meet the existing trail section (refer to **Appendix C** for additional detail on trail design).

The point on the Burke-Gilman Trail where the potential intersecting volumes would be the highest would be located southwest of the land bridge, along the route to Southwest campus. The volume is anticipated to be lower for the 2010 Proposed Action than for the 2006 Alternative due to the fact that the 2010 Proposed Action provides additional routes to NE Pacific Street from the Montlake Triangle. The same treatments are proposed for both the 2006 Alternative and the 2010 Proposed Action where connecting paths intersect the Burke-Gilman Trail. This includes stop signs and bicyclist lean rails at the paths that intersect the Burke-Gilman Trail; through traffic on the trail would not stop. No additional mitigation measures would be required under the 2010 Proposed Action.

The 2010 Proposed Action would address all of the project's Record of Decision[1] requirements. It would reduce the potential for bicycle/pedestrian collisions by grade-separating the Link pedestrian flows from the Burke-Gilman Trail. In addition, the 2010 Proposed Action would implement additional improvements, including increased width on the Burke-Gilman Trail to accommodate future demand, and elimination of the mid-block crossings on NE Pacific Place. Refer to **Appendix C** for further details on the Burke-Gilman Trail.

Parking

The 2010 Proposed Action would not change parking conditions compared to the 2006 Alternative.

Transit Facilities

The 2010 Proposed Action would improve transit facilities compared to the 2006 Alternative by increasing the amount of bus layover space that can be provided on NE Pacific Place (390 to 420 feet under the 2010 Proposed Action compared to 220 feet under the 2006 Alternative). This layover area would be located along the lowered NE Pacific Place and extend under the Rainier Vista land bridge. Buses parked in this space would be out of the Rainier Vista View corridor. Increased layover capacity was not provided in the 2006 Alternative since an extension

[1] *Record of Decision for Central Puget Sound Regional Transit Authority's (Sound Transit) North Link Segment of the Central Link Light Rail Transit Project*, June 2006. Mitigation requirements detailed in Appendix C of the ROD.

of the existing layover space would have located buses too close to the mid-block pedestrian crosswalks on NE Pacific Place and/or within the Rainier Vista view corridor. The *SR 520 High Capacity Transit (HCT) Plan* [2] identified the need for more layover space in the vicinity of the Montlake Triangle, which the 2010 Proposed Action would provide. Refer to **Appendix C** for further details on transit facilities.

Safety

Both the 2010 Proposed Action and the 2006 Alternative would grade-separate University of Washington Station patrons from Montlake Boulevard NE, NE Pacific Place, and the Burke-Gilman Trail. However, the 2010 Proposed Action, would also grade-separate non-station pedestrian and bicycle traffic from both NE Pacific Place and the Burke-Gilman Trail. Existing unsignalized crossings of NE Pacific Place and the Burke-Gilman Trail at Rainier Vista would be eliminated by the 2010 Proposed Action. Therefore, the 2010 Proposed Action would provide enhanced safety compared to the 2006 Alternative.

2.1.3 Potential Mitigation Measures

Mitigation measures for potential transportation-related impacts were identified in the 2006 FSEIS and in the 2006 NEPA ROD. Mitigation measures that relate to the 2010 Proposed Action and/or are in the vicinity of the University of Washington Station are listed in the table below. The 2010 Proposed Action would satisfy all of the transportation requirements as detailed in the table below.

Mitigation Measures in North Link Record of Decision for the 2006 Alternative	How the 2010 Proposed Action would satisfy ROD requirements
• The NE Pacific Place/Montlake Boulevard NE intersection would operate at LOS F in the years 2015 and 2030. Adding a second westbound left-turn lane would improve operations to better than No-build conditions. Sound Transit will contribute a proportionate share of costs to improve this intersection.	• Intersection is not degraded based on current traffic growth forecasts; mitigation is not required for the 2006 Alternative or 2010 Proposed Action. *However, adding the second westbound lane with split phasing would reduce conflicts with pedestrians in the crosswalks and have other benefits.* This intersection is expected to operate at LOS D or better with either lane configuration or signal phasing option.

[2] WSDOT, Sound Transit, King County Metro and the University of Washington, *SR 520 High Capacity Transit Plan,* December 2008.

Mitigation Measures in North Link Record of Decision for the 2006 Alternative	How the 2010 Proposed Action would satisfy ROD requirements
• In the vicinity of the south station entrance, Sound Transit will provide sufficient facilities for pedestrian storage and capacity by improving and widening the crosswalks across Montlake Boulevard NE and NE Pacific Street, and providing sufficient pedestrian storage capacity on either the existing refuge/traffic island or the south end of the Montlake Triangle.	• Crosswalk widths proposed for the 2006 Alternative are sufficient for the 2010 Proposed Action. No further mitigation would be required.
• At the University of Washington Station, Sound Transit will continue to work with local agencies (KCM, WSDOT, SDOT, and the University of Washington) to identify University of Washington Station design features to accommodate the increase in pedestrians associated with North Link. Design improvements such as reduced speed limit signs for bicycles, distinctive paving, or other improvements to enhance visibility and slow bicycle travel speeds along the Burke-Gilman Trail in this area will be implemented as necessary to reduce the likelihood of bicycle/pedestrian collisions. An unsignalized or signalized midblock crossing of NE Pacific Place will be provided to help balance transportation needs. An unsignalized or signalized midblock crossing of NE Pacific Place will be provided to help balance transportation needs. A station entrance or access point will be located to the north of NE Pacific Place and the Burke-Gilman Trail with an extended pedestrian passageway under or over NE Pacific Place and the Burke-Gilman Trail.	• The proposed Rainier Vista land bridge would grade-separate the Burke-Gilman Trail from station pedestrian crossings and includes features to prioritize through traffic at the new trail intersections. It would also eliminate the mid-block crosswalks on NE Pacific Place. No further mitigation would be needed.

Source: *Record of Decision for Central Puget Sound Regional Transit Authority's (Sound Transit) North Link Segment of the Central Link Light Rail Transit Project*, June 2006. Mitigation requirements detailed in Appendix C of the ROD.

Refer to Section 2.4, **Construction Impacts,** of this EIS Addendum for a list of temporary construction-related mitigation measures associated with roadways and the Burke-Gilman Trail.

2.1.4 Conclusions

The potential transportation impacts associated with the 2010 Proposed Action would be similar to those identified in the 2006 FSEIS and the 2006 NEPA Record of Decision (ROD); no additional significant impacts have been identified for the 2010 Proposed Action.

2.2 VISUAL RESOURCES AND AESTHETICS

2.2.1 Affected Environment

The 2006 FSEIS generally described the regional visual characteristics of the 7.2-mile North Link light rail project area from downtown Seattle north to the Northgate Urban Center. Visual simulations of selected station and route alternatives were prepared, including views along Rainier Vista (see Appendix P4.4 of the 2006 FSEIS for these simulations). Existing visual resources (i.e. landforms, waterbodies, vegetation and urban structures) and visual character along the route alternatives were described. Standards and policies from the University of Washington's *Seattle Campus Master Plan* (2003) concerning aesthetics, and the City of Seattle's environmental policies regarding views were discussed relative to the light rail project.

Under the 2006 Alternative evaluated in the 2006 FSEIS, the University of Washington Station would be located in the East Campus area near Husky Stadium (refer to **Figure 1-2** for an aerial photo of the site vicinity). This station location was identified in the 2006 NEPA Record of Decision (ROD) and construction of the station is underway.

As described in the 2006 FSEIS, the terrain in vicinity of the University of Washington Station generally slopes to the south, toward Portage Bay. Moderately large buildings at the University of Washington are located in the area. Scenic views toward Mount Rainier and Central Campus are possible along Rainier Vista.

Project Site

Under the 2010 Proposed Action, pedestrian access and landscape improvements associated with the University of Washington Station at Husky Stadium would be provided in the south portion of Rainier Vista, between Stevens Way and NE Pacific Place (including the Montlake Triangle) as well as within Montlake Boulevard NE. Rainier Vista is considered a unique and important landscape on the University of Washington Campus. The Vista consists of open space and landscaped areas and provides a view corridor toward Mount Rainier and Central Campus. For descriptive purposes, the project site is comprised of three areas: Lower Rainier Vista; NE Pacific Place and Burke-Gilman Trail; and, Montlake Triangle/Montlake Boulevard NE, as described below (refer to **Figure 1-2** for an aerial photo of the site).

- Lower Rainier Vista – is an open space area to the south of Stevens Way containing landscaping and gravel pedestrian paths. Limited views toward Mount Rainier are possible from the pedestrian paths on either side of the Lower Vista. Two bands of lawn and rows of cherry trees frame the Lower Vista. The 29 cherry trees in this area confine the visual width of Rainier Vista and partially block views. A paved depression occupies the central portion of the area. This depression creates a visual interruption to the larger sweep of Rainier Vista.

- NE Pacific Place and Burke-Gilman Trail – are paved vehicular and pedestrian/bicycle facilities, respectively, that cross and interrupt the north/south axis of Rainier Vista. The Burke-Gilman Trail serves as a linear recreational open space on the University of Washington campus. In the vicinity of Rainier Vista, the Trail provides views north towards Central Campus and south toward Portage Bay.

- Montlake Triangle/Montlake Boulevard NE – the Montlake Triangle is a paved and landscaped open space area located at the terminus of Rainier Vista that serves as a visual entry point to campus. The southwest portion of the triangle is occupied by a grove of Leyland cypress trees (these trees have been declining slowly and the University has been phasing the removal of these trees) and the northwest portion by a grassy area. Several smaller buildings (a Metro pump station and pedestrian entries to the garage below), as well as the vehicular access point to the garage, are located along the perimeter of the Triangle. Pedestrian paths are present on the Triangle. Views from these paths are generally of the immediate vicinity and Central Campus.

  Montlake Boulevard NE is a four- to six-lane urban arterial roadway. The visual character of Montlake Boulevard NE is defined by vehicle lanes, sidewalks, street lighting, traffic signals, crosswalks and transit facilities (including overhead trolley wires).

2.2.2 Impacts

This section summarizes visual resource and aesthetic impacts evaluated under the 2006 Alternative in the 2006 FSEIS and it provides a description and comparison of visual resource and aesthetic impacts that could occur under the 2010 Proposed Action.

2006 Alternative

The 2006 FSEIS included visual simulations that illustrated the future appearance of the North Link light rail project, as seen from key view locations along the approximately 7.2-mile route (see Appendix P4.4 of the 2006 FSEIS for these simulations). Under the 2006 Alternative, light rail would pass beneath the University of Washington's campus, which would minimize the potential for large-scale visual change, and would result in low to moderate visual impacts overall. The 2006 FSEIS concluded that visual impacts would be localized and would result from the removal of features, like buildings and trees, to build stations and associated facilities. Design treatments would be used to help visually integrate the stations and facilities into the surrounding landscape.

As indicated in the 2006 FSEIS, development of the University of Washington Station under the 2006 Alternative would avoid or reduce impacts to parks and open spaces, such as Rainier Vista. No scenic views of either Mount Rainier or the University of Washington campus would be obstructed and no scenic routes would be impacted with implementation of the project (note: no scenic routes, as defined in the City of Seattle's SEPA ordinance, are located in the vicinity of the University Station at Husky Stadium).

Pedestrian connections between the University of Washington Station and Central Campus, across Montlake Boulevard NE, were proposed as underground tunnels or alternatively as bridges. Under the 2006 Alternative, entrances from the University of Washington Station at Husky Stadium would be located on both the east and west sides of Montlake Boulevard. The potential entrances would require removal of mature trees. New landscaping would be provided to offset the loss of these trees. The 2006 FSEIS concluded that the 2006 Alternative would have the lowest levels of aesthetic/visual impacts of the alternatives that were evaluated, and that no significant impacts would be anticipated with implementation of the proposed mitigation measures.

Subsequent to the issuance of the 2006 FSEIS and ROD, Sound Transit approved the design for pedestrian access between the University of Washington Station and Central Campus that included a grade-separated pedestrian access bridge over Montlake Boulevard NE, NE Pacific Place, and the Burke-Gilman Trail

2010 Proposed Action

Similar to the 2006 Alternative evaluated in the 2006 FSEIS, development of the 2010 Proposed Action would result in visual changes in the vicinity of the University of Washington Station at Husky Stadium (i.e. in the south portion of Rainier Vista). Under the 2010 Proposed Action, visual impacts would be localized and would result from the removal of landscape features, like trees. New landscaping is proposed to minimize these impacts. The provision of a land bridge over a lowered NE Pacific Place would also introduce a new visual element to the area. As under the 2006 Alternative for the University of Washington Station, no buildings would be eliminated for the 2010 Proposed Action (refer to **Figure 1-3** for the Overall Plan for the 2010 Proposed Action).

The 2010 Proposed Action is intended to enhance the character of Rainier Vista as a visual and pedestrian entrance to campus, and avoid or reduce visual impacts to Rainier Vista. No scenic views of either Mount Rainier or the University of Washington campus would be obstructed. The continuity of the open space in Rainier Visa would be enhanced, particularly in the Lower Rainier Vista and NE Pacific Place/Burke-Gilman Trail areas (see below for details).

Under the 2010 Proposed Action, entrances to the University of Washington Station at Husky Stadium would be located on the east side of Montlake Boulevard NE (as under the 2006 Alternative). The station entrances would connect to a pedestrian and bicycle access bridge over Montlake Boulevard NE that would connect the station with the Montlake Triangle.
The potential for changes in aesthetic/visual conditions in the three areas that comprise the project site under the 2010 Proposed Action are further described below.

- Lower Rainier Vista – The paved depression in this area would be filled and a sloped lawn area, pedestrian paths and landscaping would be created (refer to **Figure 1-3**). These improvements are intended to enhance the visual and pedestrian connection between Upper and Lower Rainier Vista and increase the usable open space in this area. The existing 29 cherry trees in the Lower Vista would be removed and replaced with new lawn area. Removal of these trees is intended to eliminate the confinement and partial blockage of views they produce along the Lower Vista (refer to **Appendix B** for further details on the tree inventory and assessment).

- NE Pacific Place and Burke-Gilman Trail – A land bridge would be provided over a lowered NE Pacific Place and Burke-Gilman Trail. The trail would pass beneath the land bridge with two connecting paths linking the Burke-Gilman Trail with Rainier Vista and Central Campus (see **Figure 1-3**). The existing interruption of the north/south axis of Rainier Vista by NE Pacific Place and the Burke-Gilman Trail would be eliminated by creation of the land bridge and grade-separated trail. The land bridge would introduce a new visual element at NE Pacific Place, but would not block views. The existing views from the Burke-Gilman Trail north to Central Campus and south towards Portage Bay would be retained from the upper portion of the Trail connecting with Rainier Vista.

- Montlake Triangle/Montlake Boulevard NE – New landscaping and pedestrian facilities would be provided in the Montlake Triangle area to connect the University of Washington Station at Husky Stadium and Rainier Vista, and enhance the Triangle as an entry to campus (see **Figure 1-3**). The remaining Leyland cypress trees would be removed as a continuation of the University's phased removal of these trees. Some re-grading within the Triangle would be required. No existing buildings would be affected and no views in the area would be impacted with the proposed improvements in this area.

  A grade-separated pedestrian and bicycle access bridge would be constructed over Montlake Boulevard NE that would connect the University of Washington Station to the Montlake Triangle. The bridge over Montlake Boulevard NE would add a new visual element to the area; however, due to its location (connecting with the northeast corner of the Montlake Triangle) and proposed height, the bridge is not anticipated to impact views from Rainier Vista towards Mount Rainier or the University of Washington campus. Visually, the proposed pedestrian and bicycle access bridge would be generally consistent with other pedestrian bridges in the vicinity over Montlake Boulevard NE and NE Pacific Street.

2.2.3 Potential Mitigation Measures

Mitigation measures for potential visual/aesthetic-related impacts were identified in the 2006 FSEIS and in the 2006 NEPA ROD, and are applicable to the 2010 Proposed Action. The following additional mitigation measures related to landscaping have been identified for this EIS Addendum

- New landscaping would be provided within the Lower Rainier Vista and Montlake Triangle areas to enhance the visual environment.

2.2.4 Conclusions

The potential for visual/aesthetic impacts under the 2010 Proposed Action would be similar to those identified in the 2006 FSEIS for the 2006 Alternative; no additional significant impacts have been identified for the 2010 Proposed Action

2.3 PARKLANDS

2.3.1 Affected Environment

The 2006 FSEIS identified parks and other recreational areas (including parks, playfields, boulevards and trails) in the North Link light rail project area. Parks and recreational facilities in the proximity (within approximately 0.25 mile) of possible light rail stations were inventoried. The Burke-Gilman Trail was identified as a recreational facility in the vicinity of the University of Washington Station at Husky Stadium. The Burke-Gilman Trail is one of the most heavily used regional trails in the Seattle area and has high volumes of bicycle and pedestrian use, particularly in the University area (see Section 2.1, **Transportation**, for details). Some locations along the trail currently experience conflicts where pedestrians, vehicles and bicycles cross the trail, including at NE Pacific Place.

Project Site

Under the 2010 Proposed Action, pedestrian access and landscape improvements associated with the University of Washington Station at Husky Stadium would be provided in the south portion of Rainier Vista, between Stevens Way and Montlake Boulevard NE (including the Montlake Triangle), as well as within Montlake Boulevard NE. For descriptive purposes, the project site is comprised of three areas: Lower Rainier Vista; NE Pacific Place and Burke-Gilman Trail; and, Montlake Triangle/Montlake Boulevard, as described below (refer to **Figure 1-2** for an aerial photo of the site).

- Lower Rainier Vista – is an open space area to the south of Stevens Way. This area contains landscaping and gravel pedestrian paths. A paved, largely unused depression occupies the central portion of this area[1].

- NE Pacific Place and Burke-Gilman Trail – are paved vehicular and pedestrian/bicycle facilities, respectively, that cross and interrupt the north/south axis of the Rainier Vista open space. The Burke-Gilman Trail serves as a linear recreational open space on the University of Washington campus. At the project site, the trail is approximately 13 feet wide with one 2-foot gravel shoulder, and narrows to approximately 11 feet wide at the bridge over the depression area in Lower Rainier Vista (see **Section 2.1**, Transportation for details). As mentioned above, there are currently conflicts where pedestrians, bicycles and vehicles cross the trail, including at NE Pacific Place.

- Montlake Triangle/Montlake Boulevard NE – Montlake Triangle is a paved and landscaped open space area located at the terminus of Rainier Vista that serves as an entry point to campus. Pedestrian paths are present on the Triangle.

  Montlake Boulevard NE in the vicinity of the site contains no dedicated parks or recreational facilities.

[1] The paved depression in Rainier Vista was originally constructed as a vehicular entrance to campus. It is currently used as one of several pedestrian access points to the Triangle Parking Garage.

2.3.2 Impacts

This section summarizes the parks and recreational facility impacts evaluated under the 2006 Alternative in the 2006 FSEIS and provides a description and comparison of parks and recreational facility impacts that could occur under the 2010 Proposed Action.

2006 Alternative

The 2006 FSEIS assessed probable impacts to parks and recreational facilities along the North Link alternative routes in terms of direct effects (primarily from acquisition of property or obtaining easements for use of property) or indirect/proximity effects (i.e. due to increased traffic, noise, degradation of the visual or aesthetic setting and/or station area activity). It was noted that most project impacts would be due to proximity effects.

Under the 2006 Alternative, the University of Washington Station at Husky Stadium would include a pedestrian entrance on the Montlake Triangle, directly across NE Pacific Place from the Burke-Gilman Trail. The trail would likely experience increased use as some transit riders may use the trail to access the station. Potential conflicts could arise between transit riders who use or cross the trail and recreational users on the trail. To address this concern, Sound Transit and FTA committed to developing a grade-separated crossing of the trail and NE Pacific Place, via either a tunnel or bridge, to maintain connectivity between the University of Washington Station and the campus while avoiding impacts to the trail and its users. This mitigation measure is documented in the NEPA ROD issued in June 2006.

2010 Proposed Action

The 2010 Proposed Action is intended to enhance the character of Rainier Vista as a visual and pedestrian entrance to campus. The continuity of the open space in Rainier Visa would also be improved, particularly in the Lower Rainier Vista and NE Pacific Place/Burke-Gilman Trail areas. The potential for parks and recreational facility impacts in the three areas that comprise the project site under the 2010 Proposed Action are further described below.

- Lower Rainier Vista – The paved depression in this area would be filled and a sloped lawn area, pedestrian paths and landscaping would be created (refer to **Figure 1-3**). These improvements are intended to enhance the visual and pedestrian connection between Upper and Lower Rainier Vista and increase the usable open space in this area.

- NE Pacific Place and Burke-Gilman Trail – A land bridge would be provided over a lowered NE Pacific Place and Burke-Gilman Trail. The Burke-Gilman Trail in the vicinity of the land bridge would be improved to grade-separate the trail from Rainier Vista. Through the project area, the Burke-Gilman Trail would be widened from the existing 11-13-foot width to 14 feet with two-foot wide gravel shoulders. Design of the trail would not preclude future widening of the trail by the University of Washington for a total trail width of 30 feet. Two connecting paths would also be provided to link the Burke-Gilman Trail to Rainier Vista and Central Campus (see **Figures 1-3 and 1-4**). The existing interruption of the Rainier Vista open space by NE Pacific Place and the Burke-Gilman Trail would be eliminated by creation of the land bridge and grade-separated trail. Existing conflicts where pedestrians, vehicles and bicycles cross the trail at NE Pacific Place would also

be eliminated. In addition, the 2010 Proposed Action would reduce the potential for bicycle/pedestrian conflicts by separating north/south pedestrian travel along the Rainier Vista from crossing the Burke-Gilman Trail (see Section 2.1, **Transportation**, for details on Burke-Gilman Trail conditions).

- Montlake Triangle/Montlake Boulevard NE – New landscaping and pedestrian facilities would be provided in the Montlake Triangle area to connect the University of Washington Station at Husky Stadium and Rainier Vista, and enhance the Triangle as an entry to campus (see **Figure 1-3**).

  Montlake Boulevard NE in the vicinity of the site contains no parkland or dedicated recreational facilities; therefore, no impacts to such facilities would result.

No significant parks and recreational facility impacts would be anticipated under the 2010 Proposed Action. The 2010 Proposed Action would implement the mitigation measures identified in the 2006 FSEIS and ROD related to provision of a pedestrian grade-separated crossing of the Burke-Gilman Trail. Other proposed improvements to the Burke-Gilman Trail would further reduce the potential for pedestrian/bicycle conflicts on the trail near the UW Station and Montlake Triangle. Additionally, proposed pedestrian/bicycle facilities (including a bicycle ramp to the proposed bridge over Montlake Boulevard NE, side-by-side at grade pedestrian/bicycle paths located between the University Station and Montlake Boulevard NE, and stairs and elevator on the west side of Montlake Boulevard NE connecting the proposed bridge to the Montlake Triangle) would provide new pedestrian and bicycle route options in the area.

2.3.4 Conclusions

The potential impacts to parks and recreational facilities under the 2010 Proposed Action would be similar to those identified for the 2006 Alternative; no additional significant impacts have been identified for the 2010 Proposed Action and no new or additional mitigation measures are proposed.

2.4 CONSTRUCTION IMPACTS

2.4.1 Affected Environment

The University of Washington Station site was identified in the 2006 FSEIS as being primarily comprised of surface parking areas and open space areas southwest of Husky Stadium and open space areas associated with the Montlake Triangle. Land uses in the vicinity of the site that could potentially be affected by the proposed construction of pedestrian and landscape improvements are varied and primarily include University athletic facilities (Husky Stadium and Hec Edmundson Pavilion), surface parking areas, University of Washington Medical Center (UWMC) uses, open space areas (including the Burke-Gilman Trail) and academic uses.

2.4.2 Impacts

This section summarizes construction-related impacts evaluated under the 2006 Alternative (in the 2006 FSEIS) and provides a description and comparison of construction-related impacts that could occur under the 2010 Proposed Action.

2006 Alternative

Construction impacts under the 2006 Alternative included noise, vibration, dust, and traffic from construction activities. Partial lane closures would be required during construction that would affect traffic operation on Montlake Boulevard NE and on other streets in the vicinity of the site. Traffic rerouting and delays could affect emergency vehicles and could require additional police services. Construction activities would also require a temporary detour of the Burke-Gilman Trail.

During construction, trees and other landscaping would be removed on the site that could affect the visual landscape of the area. The use of cranes could be required during construction and could affect views from Rainier Vista. Construction activities would generate large amounts of excavation spoils and could produce vibration and settlement.

Construction impacts under the 2006 Alternative would be temporary and with the implementation of mitigation measures identified in the 2006 FSEIS, no significant impacts were anticipated.

2010 Proposed Action

Construction impacts under the 2010 Proposed Action would generally be similar to those described for the 2006 Alternative and would include noise, vibration, dust, and traffic from construction activities. A Traffic Management Plan (TMP) and Maintenance of Traffic (MOT) Plan would be required prior to construction (refer to the Mitigation Measures section for further details). Construction for the 2010 Proposed Action is anticipated to coincide with construction of the University of Washington Station and would be completed in two year-long phases, the first beginning in mid-2012 and the second beginning in the 1st quarter of 2014. Construction traffic associated with both projects would increase the potential for increased delays and congestion in the vicinity of the site. The construction Traffic Management Plan (TMP) and Maintenance of Traffic (MOT) plan developed for this project would include the consideration of

traffic associated with the construction of the University of Washington Station to minimize the potential for concurrent construction to impact traffic flow (see the Potential Mitigation Measures section for further details on the TMP and MOT plan).

Partial lane closures of NE Pacific Place would be required during construction that could affect traffic in the vicinity. Traffic flow around the Montlake Triangle would likely require that the northeast bound lane on NE Pacific Place remain open during daytime hours. The southwest bound lane on NE Pacific Place could be closed during daytime hours provided that a detour and other appropriate mitigation measures are implemented (refer to **Appendix C** for further information on construction lane closures). See the Potential Mitigation Measures section below for further details on construction mitigation.

Temporary full closures of NE Pacific Place could also occur during nighttime hours. The closure of all lanes during the evening would also require additional mitigation measures, including detour routes and police-officer traffic control (refer to **Appendix C** for further information on construction lane closures).

Construction of the pedestrian and bicycle access bridge over Montlake Boulevard NE could temporarily affect through traffic lanes on Montlake Boulevard NE. While the method of construction has not been determined for the bridge at this time, a Maintenance of Traffic (MOT) plan would be required during construction of the bridge and two through lanes in each direction on Montlake Boulevard NE would be maintained during peak traffic hours. Additional lane restrictions could be considered at night (i.e. one lane in each direction and/or alternating flow with flagger control) if it is determined that traffic flow needs could be accommodated. See the Potential Mitigation Measures section below for further details on construction mitigation measures for Montlake Boulevard NE (refer to **Appendix C** for further detail on construction lane closures).

Traffic rerouting and delays could affect emergency vehicles and could require additional police services. Construction activities would also require a temporary detour of the Burke-Gilman Trail.

Trees and other landscaping would be removed on the site which could affect the visual landscape of the area. Approximately 29 Cherry trees would be removed in Lower Rainier Vista (several of these were poorly pruned following a previous storm). The existing Leyland cypress grove located on the west side of the Montlake Triangle is also in poor health and would be removed (refer to **Appendix B** for further details regarding the tree inventory and assessment).

Construction activities would generate excavation spoils, including approximately 16,000 cubic yards of material from the excavation and lowering of NE Pacific Place[1]. Provided that the excavation spoils meet the required criteria, a portion of the material (approximately 7,700 cubic yards) could be used to fill the depressed roadway in the Lower Rainier Vista area. The Montlake Triangle area would also be excavated to within 12 inches of the existing Triangle Parking Garage roof. Geofoam or a similar lightweight fill material would be used as fill for a majority of the Montlake Triangle area in order to comply with the load requirements of the Triangle Parking Garage. Existing truck haul routes approved for the construction of the

[1] Excavation activities would require approximately 830 truck trips to transport excavation spoils to an offsite location. Truck trips are based on a calculation of 10 cubic yards/truck and the use of approximately 7,700 cubic yards of spoils within Lower Rainier Vista.

University of Washington Station would be utilized for soil export associated with the lowering of NE Pacific Place.

The existing Burke-Gilman Trail bridge would be abandoned in place or demolished during construction. The existing NE Pacific Place bridge would also be demolished. The Burke-Gilman Trail would remain open during construction, with a temporary trail detour route provided as close to the existing alignment as possible.

Similar to the 2006 Alternative, construction impacts under the 2010 Proposed Action would be temporary in nature and with the implementation of mitigations measures identified in the 2006 FSEIS and in this section, no significant impacts would be anticipated.

2.4.3 Potential Mitigation Measures

Mitigation measures for potential construction-related impacts were identified in the 2006 FSEIS and in the 2006 NEPA ROD. These measures would apply to the 2010 Proposed Action. Additional mitigation measures that would be implemented as part of the 2010 Proposed Action include the following:

Transportation

- The contractor would submit two traffic-related plans in advance of construction, including a Traffic Management Plan (TMP) and a Maintenance of Traffic (MOT) plan.

- Existing truck haul routes approved for the construction of the University of Washington Station would be utilized for soil export associated with the lowering of NE Pacific Place.

- The TMP and MOT plans would be approved by Sound Transit, the University of Washington and if a street use permit is required, the Seattle Department of Transportation (SDOT). These plans would address the following:

  - Maintenance of vehicular traffic when there are changes made to any existing lane configurations, traffic flow, or traffic control.

  - Maintenance of pedestrian and bicycle traffic that uses the Burke-Gilman Trail, sidewalks along NE Pacific Place, and connections to these facilities.

  - Maintenance of transit routes, transit stops, and layover facilities, particularly the electric trolley routes that use NE Pacific Place.

  - Emergency vehicle access to the UWMC.

  - Access to the Triangle Parking Garage. Two-way access on NE Pacific Place between NE Pacific Street and the garage driveway must be maintained at all times.

  - Replacement of bus staging locations if NE Pacific Place is not available during Husky Football games.

- Coordination with construction for the University of Washington Link Light Rail Station adjacent to Husky Stadium.

- Details on channelization and signage that would be used to route traffic around construction on Montlake Boulevard NE.

- Maintenance of two through lanes in each direction on Montlake Boulevard NE during peak traffic hours (7:00 AM to 10:00 PM). At night, additional lane restrictions (i.e. one lane in each direction and/or alternating flow with flagger control) could be considered if traffic flow needs could be accommodated.

- Maintenance of a pedestrian and bicycle path on the east side of Montlake Boulevard NE.

The following additional mitigation measures would be implemented to close the southwest bound lane of NE Pacific Place:

- Obtain approval from SDOT to close the street, which may require a street use permit.

- Include proposed detour routes, signage, and coning in the contractor's required TMP and MOT plans.

- Work with SDOT and King County Metro to extend the general-purpose vehicle access into the southbound curb lane on Montlake Boulevard NE approaching NE Pacific Street. Most of this lane is now restricted to transit only, and general-purpose traffic is allowed to enter the lane at the far south end. During construction only, an extension of the general-purpose lane would be considered.

The following additional mitigation measures would be required to implement a full closure of NE Pacific Place during the nighttime hours:

- Obtain approval from King County Metro to alter nighttime service that currently uses NE Pacific Place. Depending on the closure times, King County Metro may need to alert riders, alter routes, and/or change equipment from electric trolleys to diesel buses.

- Obtain approval from SDOT to close the street, which may require a street use permit.

- Secure police-officer control for the Montlake Boulevard NE/NE Pacific Street intersection. The Seattle Police Department would determine if one or two officers are needed.

- Include proposed detour routes, signage, and coning in the contractor's required TMP and MOT plans. Coning on NE Pacific Street would be needed to channelize an eastbound left-turn lane. This lane would be converted from one of the two general-purpose right-turn lanes.

- Use police-officer control for the Montlake Boulevard NE/NE Pacific Street intersection with the following phasing:

    - Northbound and southbound thru movements.

- Eastbound left-turn and westbound left-turn (dump trucks exiting the Sound Transit portal are allowed to turn left at night only).

- Northbound left-turn and eastbound right-turn only plus the pedestrian crossing of Montlake Boulevard NE.

Ecosystems

- Existing trees and landscaping removed during construction would be replaced with new landscaping, including lawn area and other vegetation.

- Tree protection measures for trees located near construction areas would be provided.

Geology and Soils

- All temporary and/or permanent shoring would be designed in accordance with applicable standards and regulations and would be approved by the University of Washington.

- Dewatering would be provided as needed during the construction process to prevent the accumulation of water in excavations.

Parklands

- The Burke-Gilman Trail would remain open during construction and a trail detour route would be provided as close to the existing alignment as possible.

2.4.4 Conclusions

In general, the potential for construction-related impacts under the 2010 Proposed Action would be similar to those identified for the 2006 Alternative in the 2006 FSEIS; no additional significant impacts have been identified for the 2010 Proposed Action.

2.5 CUMULATIVE IMPACTS

2.5.1 Affected Environment

Cumulative impacts are defined as "the impacts on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such action." The 2006 FSEIS indentified several regional transportation projects by Sound Transit and the Washington State Department of Transportation (WSDOT) that could be implemented in the future and contribute to cumulative impacts. Potential future projects that would be located in the vicinity of the site would primarily include the SR-520 Bridge Replacement Project and development associated with the University of Washington.

2.5.2 Impacts

2010 Proposed Action

Cumulative short-term construction impacts would be similar to the 2006 Alternative. The temporary closure of a portion of NE Pacific Place, temporary lane modifications on Montlake Boulevard NE, and additional haul trucks associated with the 2010 Proposed Action would increase the potential for cumulative construction impacts (refer to Section 2.4, **Construction Impacts**, for further details). Cumulative temporary construction impacts could include increased construction noise and vibration; increased traffic congestion and delays; increased dust and vehicle emissions, temporary impacts to wildlife and ecosystems; and, increased fire and police response times. Mitigation measures identified in the 2006 FSEIS sections and in this EIS Addendum would also apply to cumulative impacts and no significant adverse cumulative construction impacts would be anticipated.

Long-term operational conditions would be similar to the 2006 Alternative and no significant adverse cumulative operational impacts would be anticipated.

2.5.3 Conclusions

In general, the potential for cumulative impacts under the 2010 Proposed Action would be similar to those identified for the 2006 Alternative in the 2006 FSEIS; no additional significant impacts have been identified for the 2010 Proposed Action.

Appendices

Appendix A – Current Sound Transit Pedestrian Access Design

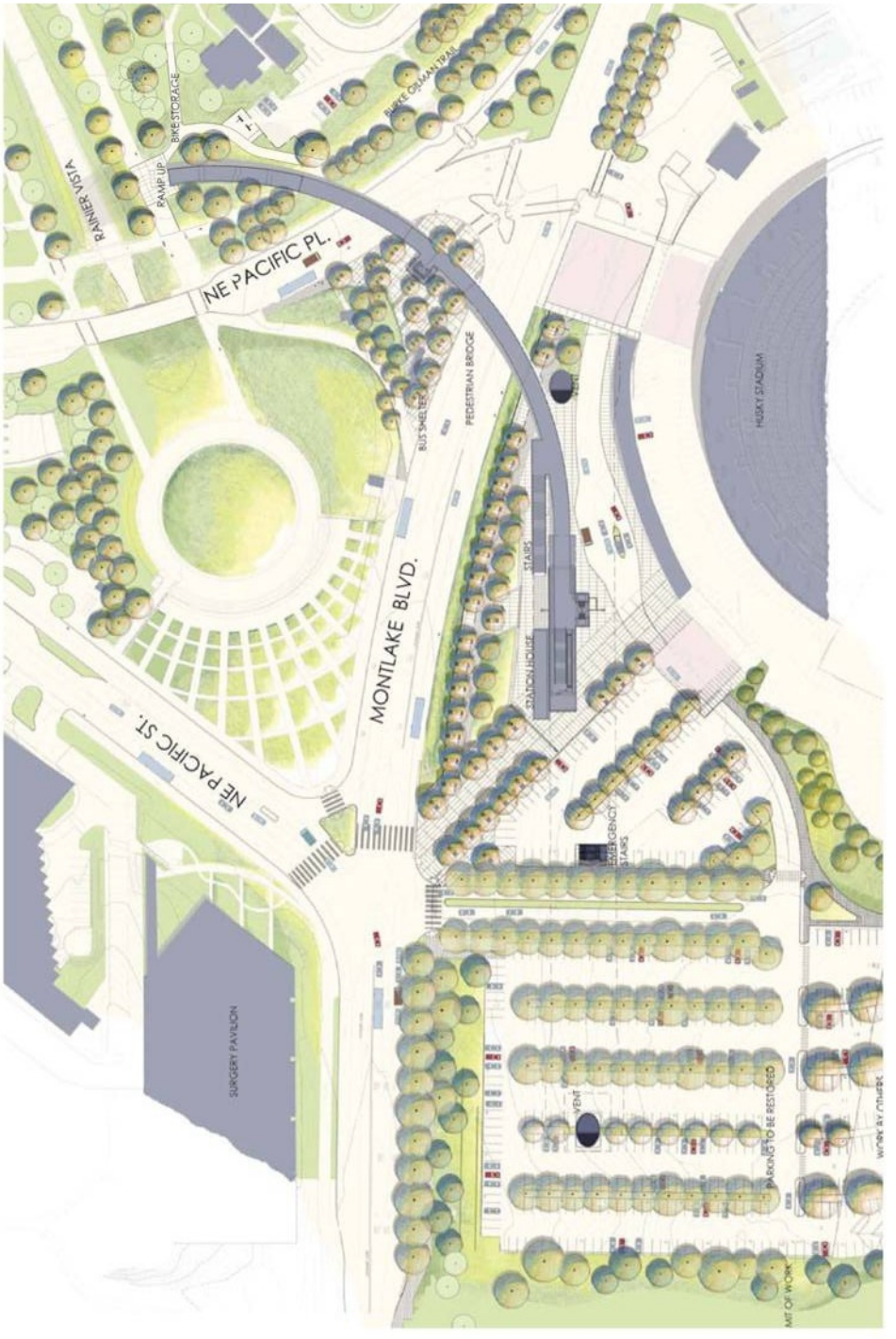
Appendix B – Tree Inventory and Assessment

Appendix C – Transportation Technical Memorandum

Appendix A

Current Sound Transit Pedestrian Access Design

Appendix A - Current Sound Transit Pedestrian Access Design



Appendix B

Tree Inventory and Assessment

Consulting Arborists

TO: Kristine Kenney, University of Washington

JOB SITE: University of Washington – Rainier Vista Pedestrian Bridge
Project No. 203207

SUBJECT: Tree Inventory and Assessment

DATE: January 25, 2010

PREPARED BY: Holly Iosso, ISA Certified Arborist #6298
Sean Dugan, ASCA Registered Consulting Arborist #457

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Attachments:
- ***Table of Trees***

Summary

Four hundred and twelve (412) trees were measured and assessed for condition.

One hundred seventy-nine (179) of the 412 trees have a condition rating of 80% or greater. One hundred twenty-three (123) were given a condition rating between 70% and 79%. Seventy (70) trees have a condition rating between 60% and 69%. Forty (40) trees have a condition rating below 60%.

We recommend the removal of one tree along Rainier Vista due to poor form and uncorrected leaning growth over a pedestrian path. Of the other trees assessed, branch failure is the most probable part to fail, and there is a low risk from these trees.

Twenty-eight (28) trees meet the City of Seattle's definition of an "Exceptional" tree. Three additional trees may also qualify as "Exceptional" but further identification of the species is required once the trees leaf out.

Six tree groves meet the City of Seattle's definition of "Exceptional".

Tree Solutions Inc.
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Phone 206.528.4670 Fax 206.547.5873

Assignment & Scope of Report

This report is a summary of the site visit by **Sean Dugan, Registered Consulting Arborist**, and **Holly Iosso, Certified Arborist**, of Tree Solutions Inc. made on January 11, 2010. We were provided an aerial photograph showing the areas over the Triangle Garage and Rainer Vista, along the Burke-Gilman Trail, and Stevens Way. We were asked to assess all trees within the buffers along the east and west sides of the vista, all trees between the Burke Gilman trail and adjacent roadway up to the Hec/Ed overpass, and all trees within 20 ft of the Burke Gilman trail to the north for health and structural condition. We were asked to provide a formal report with our findings and recommendations. We were asked to provide a Table of Trees listing the common and botanical names, diameter at standard height, and condition ratings. Kristine Kenney, Landscape Architect with the University of Washington, requested these services.

Limits of Assignment

Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, climbing, or coring unless explicitly specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

The assessment does not include the trees on the south side of Pacific Ave or the trees within the parking lot around Bloedel and Winkenwerder Halls. Additional assumptions and limiting conditions can be found in Appendix A.

Methods

We evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts (Mattheck & Breloer, 1994). An understanding of the uniform stress allows us to make informed judgments about the condition of a tree.

Using the information gathered during the VTA analysis, we assigned a condition rating to the tree using the University of Washington's Tree Rating Criteria as seen in Appendix B. The University of Washington has criteria for designating trees as having "Extraordinary", "Exemplary" & "Significant" status. These are defined in relation to other trees on campus—a database to which we do not have access. Criteria for these designations includes rarity, specimen value, aesthetic and cultural contributions to the campus. Someone from the University should be able to provide designation status for any of these trees, if any designations exist.

The City of Seattle Director's Rule 16-2008 establishes additional criteria that can be used to determine if a tree or grove of trees is designated as an "Exceptional" tree within the City as pursuant to the Seattle Municipal Code (SMC) Chapter 25.11. Trees and groves of trees that meet the City's definition of "Exceptional" are indicated in the attached Table of Trees.

For trees that have multiple stems, a single diameter at standard height (DSH) was estimated using an adjusted trunk area as described in the Guide for Plant Appraisal, 9th Edition published by the International Society of Arboriculture in cooperation with the Council of Tree and Landscape Appraisers. DSH approximations were needed to determine exceptional status for trees as defined by the City of Seattle.

Observations

The Site

The site is located west of the University's Husky Stadium and can be seen in Appendix C – Aerial Photograph with Tree Locations. The areas around the trees are well developed with multiple institutional structures, roadways, and paths. One area, just south of the Hec/Ed overpass and along the Burke-Gilman trail, was recently under construction. Excavation occurred near a few trees and materials were stored in the critical root zones of several trees.

The Trees

The four hundred and twelve (412) trees we were asked to assess can be located by number in Appendix C - Aerial Photograph of Site with Tree Locations. Observations specific to each tree can be found by tree number in the attached Table of Trees.

Notable observations include:

- The Leyland cypress (x *Cuppressus leylandii*) trees in the area over the Triangle Garage have been declining slowly and the University has been phasing the removals. Two trees have failed but are being supported by adjacent trees. The University has re-planted with several small-diameter Douglas-fir (*Pseudotsuga menziesii*) trees on the east side of the Triangle. We were not asked to make an in-depth assessment of these trees.

- The areas flanking the central Rainer Vista Roadway contain a contiguous planting of Kwanzan cherry (*Prunus serrulata* 'Kwanzan') trees. Many of these trees have been improperly pruned with heading cuts.

- A large number of mature canopy trees stand as groves along the perimeters of the Rainer Vista Roadway, between the Kwanzan cherry trees and the adjacent structures.

- One Douglas-fir tree #5977 has grown at a considerable lean over the pedestrian path along Rainier Vista. There is no apparent phototrophic growth correcting the lean once the stem reaches light.

- Flowering dogwoods (*Cornus florida*) and Hawthorns (*Crataegus sp.*) lining the south side of the Burke-Gilman Trail have severe injuries at the base.

- Several hawthorn, pear and apple trees grow along the Burke Gilman Trail. Specific epithet for these trees was unable to be determined at this time; more extensive identification can be continued after the trees leaf out in the Spring and Summer season.

Discussion

Risk & Condition Rating

Four hundred and twelve (412) trees were evaluated for health and structural condition. None of the trees presents a high level of risk with an imminent probability of failure into the surrounding targets. However, one tree #5977, has a moderate level of risk and should be considered for removal. The Douglas-fir tree has grown in a dense stand of conifers and originally grew with a lean, presumably growing towards the light. However, the stem is now in the light and does not exhibit signs of corrective phototropic growth. We recommend removing this tree, as it grows out over a pedestrian path that is used in all seasons. The removal of this tree should not affect the adjacent trees in the stand.

Small and moderate-diameter branches are the most likely parts to fail in almost all of the other trees observed. Dead, damaged, diseased, and branches with poor structure are more probable to fail than normal healthy branches.

The two lines of Kwanzan cherry trees along Rainier Vista have had recent pruning cuts. Although we are unsure we speculate that this could have been in response to storm or ice damage from the December 2008 when heavy snow lasted in Seattle for two weeks. Cherry trees do not respond well to excessive pruning, and we recommend only removing dead limbs as needed for the next three years. This will allow the tree suckers that follow the pruning cuts to re-establish a typical habit without causing additional suckering. Adding mulch circles around the base of each tree will also be beneficial and keep lawn mowers away from each tree base.

Flowering dogwoods and Hawthorns lining the south side of the Burke-Gilman Trail have been repeatedly injured at the base. This is most likely caused by lawn-mowers and weed eaters. Currently there is grass mixed with moss that grows up to the base of the tree. The moss indicates that there is a high moisture holding properties of the soil likely due to compaction and not enough sunlight to grow turf in this area. A mulch circle around the base of the trees can help keep lawnmowers away from the trunks, as well as improve the soil and aeration within the critical root zone and mitigate some of the negative effects of compaction from the high foot traffic areas.

Several hawthorn, pear, and apple trees grow along the Burke Gilman Trail. Specific epithet for these trees was unable to be determined at this time; more extensive identification can be continued after the trees leaf out in the summer season.

Trees 6081 Giant redwood (*Sequoiadendron gigantium*), 6086 Red maple (*Acer rubra*), 7287 Willow oak (*Quercus phellos*), and 7288 Deodar cedar (*Cedrus deodara*) were all adjacent to ongoing construction at the time of our assessment. None of the trees appeared to have any significant tree protection measures. Fortunately, each tree of these trees are tolerant of contractor pressures and no major negative impacts are likely to result.

Exceptional Trees and Groves

Twenty-eight trees meet the City of Seattle's definition of an "Exceptional" tree. Tree species include

Bigleaf maple (*Acer macrophyllum*)
Horse chestnut (*Aesculus hippocastanum*)
Pacific madrone (*Arbutus menziesii*)
Deodar cedar (*Cedrus deodara*)
Downy hawthorn (*Crataegus mollis*)
Knobcone pine (*Pinus attenuata*)
Lombardy poplar (*Populus nigra*)
Douglas-fir (*Pseudotsuga menziesii)*
Black locust (*Robinia pseudoacacia)*
Giant redwood (*Sequoiadendron giganteum*)
English elm (*Ulmus procera*)

The Seattle Municipal Code does not allow for the removal or topping of Exceptional Trees "unless it is required for the construction of a new structure, retaining wall, rockery or other similar improvement that is approved as part of an issued building or grading permit as provided in Sections 25.11.060" (SMC 25.11.040.) If the SMC "Exceptional" trees are to be preserved, they should be protected to maintain their current health and appearance.

There are six groves of trees that are considered "Exceptional" according to the City of Seattle. "Exceptional" groves have eight or more trees measuring 12 inches DSH or greater with a continuous canopy. Our interpretation is that these groves are masses of trees in which the tree canopies are intertwined and the growth of one tree has been influenced by the presence of adjacent tree canopies. The six groves are designated A to F and are shown in Appendix D: Aerial Photograph marking Exceptional Tree Groves. Tree grove designations are also noted in the Table of Trees.
These groves are:

Grove	Location	Description	# of trees in Grove	# of trees 12"DSH or greater
A	Burke Gilman Trail east of Rainier Vista	Row of Cedar trees	17	17
B	Burke Gilman Trail east of Rainier Vista	Row of Cedar trees	11	11
C	Along east side of Rainier Vista	Mixed tree canopy	15	11
D	Along east side of Rainier Vista	Mixed tree canopy	15	11
E	Along west side of Rainier Vista	Coniferous tree canopy	67	41
F	Along west side of Rainier Vista	Coniferous tree canopy	14	13

Treatments

The Pacific madrone trees 7217, 7275, 7281 and 7335 are in normal health condition and meet the City's definition of "Exceptional". In particular, trees 7217, 7281 and 7335 have excellent vigor and no significant symptoms of the three diseases that often affect this species: *Phytophthora, Nattrassia*, and *Fusicoccum*. Recent studies indicate that trees treated with Phosphorus, by basal injection or spray, have a significant reduction in the probability of contracting these diseases.

English elm trees are susceptible to Dutch Elm Disease (DED). It is difficult to determine if a tree is infected when not in leaf. Often, the structure of the branches in the top of the tree canopy can provide an indication of infection. Currently, none of the trees in this survey show signs or symptoms of the disease.

Seven of the elm trees: 5718, 6027, 6080, 7213, 7283, 7273, and 7285 are greater than 18 inches and should be considered for DED protection. Trees that become stressed are more susceptible to being attacked by beetles which act as a vector for the fungal pathogen. Trees that will be near any construction need to be sufficiently protected to avoid becoming compromised and risking infection. Preventative treatment of the trees against the DED is possible, for elm trees that are not currently being treated. However, this only treats infection from the beetle vector and not from root grafting.

An issue to consider for future management of the elm trees in Grove A and the stand to the North is the high density of sprouts. Many small diameter size sprouts are developing in these areas. The sprouts become susceptible to the attack from pathogen carrying beetles once they have branches between two and four years of age. The numerous sprouts and likelihood for root grafting could make the control of a DED outbreak very difficult to manage. Thinning these areas of the non essential trees sprouts will be an appropriate management action.

Recommendations

- Hold off on any additional pruning of the Kwanzaan Cherry trees to allow for regrowth to re-establish typical forms.
- Remove tree #5977.
- Establish mulch circles around Flowering Dogwood and Hawthorn trees along the Burke Gilman Trail.
- Establish tree protection for trees that may be near construction, especially City of Seattle designated “Exceptional” Trees and Tree Groves.
- If any significant Elm trees are going to be preserved, they should be treated against Dutch Elm Disease. Sprouts surrounding these trees should be thinned to avoid potential issues that can develop with DED and root grafts.
- If any Madrone trees are going to be preserved, they should be treated with a Phosphorous injection or spray to fight against potential pathogens

Glossary

CD = codominant trunks: stems or branches of nearly equal diameter, often weakly attached (Matheny *et al.* 1998)

critical root zone: the area containing the roots necessary for the tree's health and stability in which no grading or construction activity should occur (adapted from Harris 2004)

DSH: diameter at standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)

Dutch Elm Disease: A plant disease affecting American and English Elm species caused by the fungus *Ophiostoma ulmi*. This quick- spreading disease can cause wilting and entire plant death

Exceptional tree: a tree or group of trees that because of its unique historical, ecological, or aesthetic value constitutes an important community resource, and is determined as such by the Director according to the standards and procedures promulgated by the Department of Planning and Development (DPD). (Seattle Municipal Code, 2009)

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Appendix A - Assumptions & Limiting Conditions

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.
2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.

3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.
4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.
5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.
6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.
7. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event or upon any finding to be reported.
8. Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.
9. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of the those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plans or property in question may not arise in the future.
10. Loss or alteration of any part of this Agreement invalidates the entire report.

Appendix B - University of Washington's Tree Rating Criteria

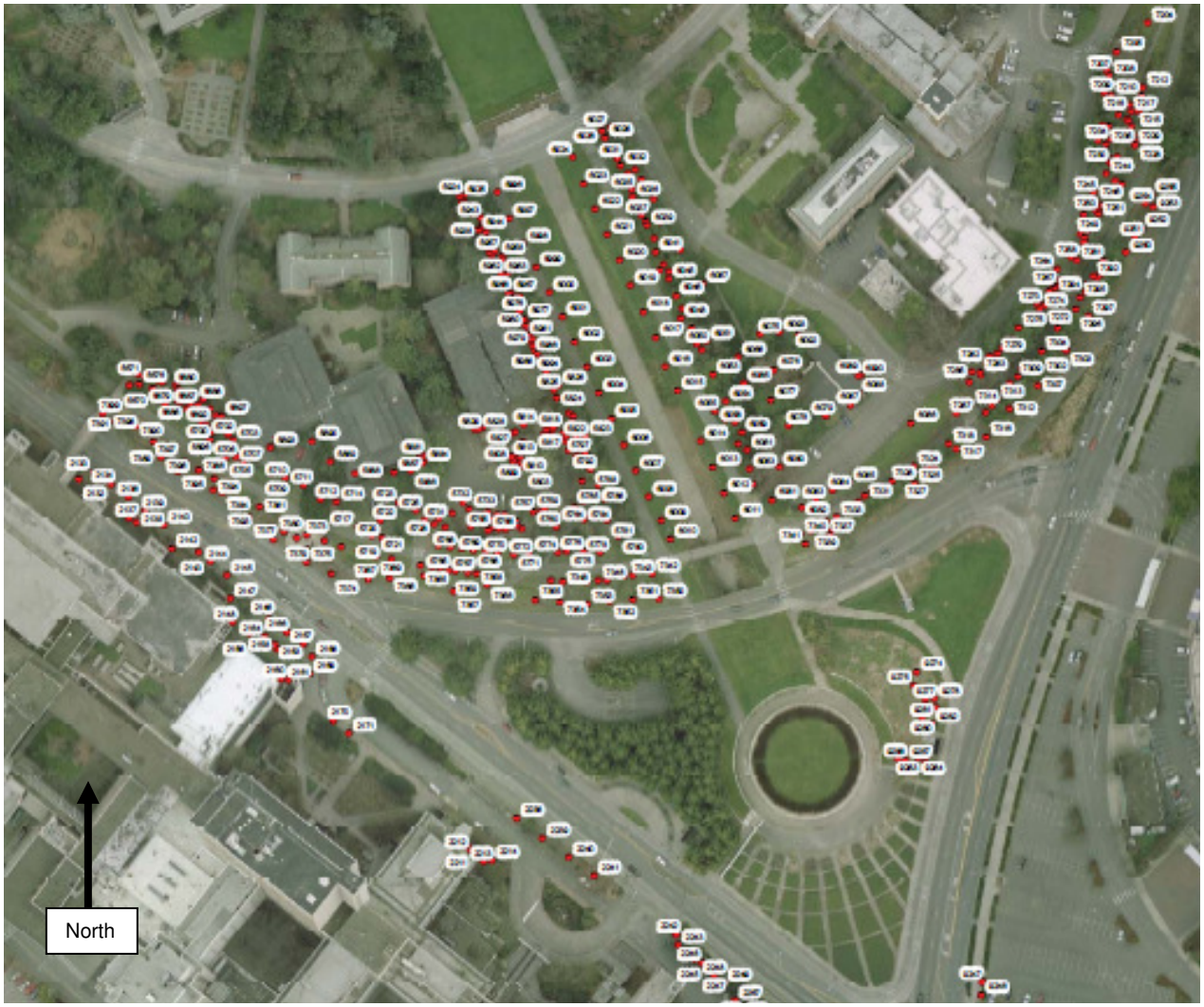
CONDITION RATING FORMULA

factor	variation	points awarded
Crown Development	Characteristic of species, well balanced	5
	Lacking natural or desired symmetry	3
	Lacking full crown	1
Trunk	Sound and solid	5
	Section of bark missing	
	Less than 1/4 of circumference	4
	1/4 to 1/2 missing	3
	More than 1/2 missing	1
	Extensive decay or hollow	0
Major branch structure	No defects	5
	Dieback limited	4
	Few structurally important dead or broken branches	3
	Several structurally important dead or broken branches	1
Twig growth rate	Typical for species and age, usually 4 to 6 inches	5
	Less than 1/2 normal growth rate	3
	Growth rate greatly reduced, yearly decline	1
Foliage	Normal size and color for species	5
	Minor deficiency/pollution symptoms	3
	Major deficiency/pollution symptoms	1
Insects & disease	No insects or diseases apparent	5
	Few insects or diseases present and these are controllable	3
	Severe infestation	1
Roots	No root problems apparent	5
	Minor root problems	3
	Severe root problems	1

SCORING PROCEDURE

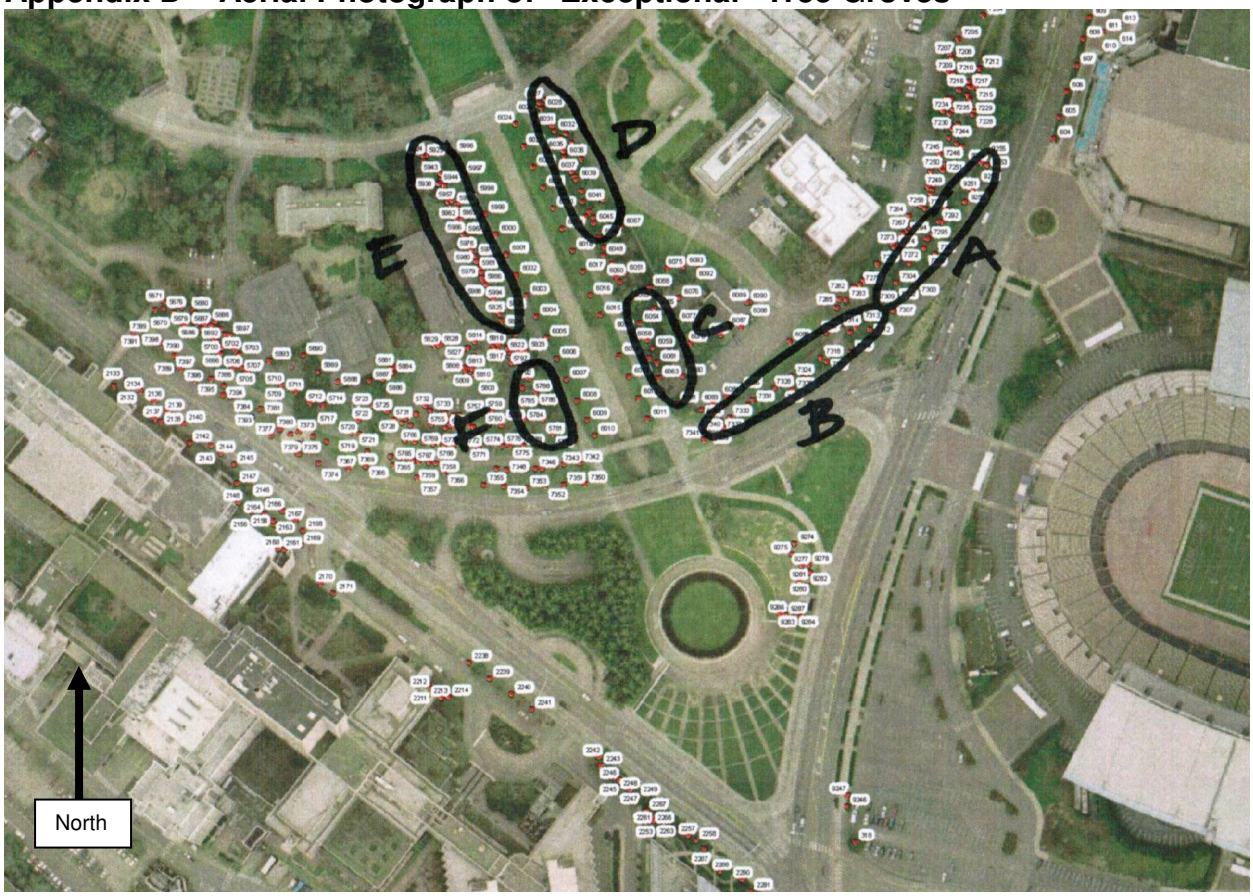
total points	condition	condition rating (%)
30 - 35	excellent	90 - 100
24 - 20	good	70 - 89
17 - 23	fair	50 - 69
11 - 11	poor	25 - 49
6 - 10	very poor	0 - 24

Appendix C – Aerial Photograph of Site with Tree Locations



Aerial Photograph Provided by University of Washington.

Appendix D – Aerial Photograph of "Exceptional" Tree Groves



Aerial Photograph Provided by University of Washington.

Tree #	Grove	Species	Common Name	Exceptional per City of Seattle	DSH*	Multi-Stem DSH	Crown	Trunk	Branch	Twig	Foliage	Insects/ Diseases	Roots	Condition Rating	Notes
140		*Acer macrophyllum*	Bigleaf maple	Exceptional	33		4	3	4	5	4	5	5	86%	measured below junction
141		*Populus nigra*	Lombardy poplar	Exceptional	39		4	4	3	4	4	5	5	83%	hangers in canopy
142		*Populus nigra*	Lombardy poplar		11		3	4	3	3	4	5	5	77%	
143		*Populus nigra*	Lombardy poplar	Exceptional	51		4	5	4	4	4	4	4	83%	close to road
144		*Acer macrophyllum*	Bigleaf maple		7	4+3+3+3	3	3	4	4	5	3	4	74%	stump sprout
145		*Populus nigra*	Lombardy poplar		11		4	4	4	5	5	5	5	91%	
146		*Acer macrophyllum*	Bigleaf maple		3		3	4	3	3	5	5	5	80%	surpressed
147		*Acer macrophyllum*	Bigleaf maple		12	8+8+3	4	4	5	5	5	5	5	94%	
148		*Acer macrophyllum*	Bigleaf maple		7		4	4	4	4	5	5	5	89%	
149		*Crataegus mollis*	Downy hawthorn	Exceptional	14	12+7	5	4	4	5	5	4	5	91%	Forked at 3 feet above grade
5668		*Ailanthus altissima*	Tree of Heaven		14		4	3	4	4	4	4	4	77%	
5669		*Fraxinus latifolia*	Oregon ash		4		3	3	3	3	3	3	3	60%	
5670		*Pinus densiflora*	Japanese red pine		16		4	4	4	4	4	4	4	80%	
5675		*Sequoiadendron giganteum*	Giant redwood		26		4	4	4	4	4	4	4	80%	
5676		*Betula pendula*	European white birch		10		3	3	3	3	3	3	3	60%	
5677		*Prunus emarginata*	Bird cherry		5		3	3	4	4	4	4	4	74%	
5678		*Acer macrophyllum*	Bigleaf maple		13		4	4	4	4	4	4	4	80%	
5679		*Crataegus spp.*	Hawthorn		6		3	2	3	3	4	4	4	66%	Unable to determine specific epithet **
5681		*Crataegus spp.*	Hawthorn		4		3	2	3	3	4	4	4	66%	Unable to determine specific epithet **
5682		*Crataegus spp.*	Hawthorn		3		3	2	3	3	4	4	4	66%	Unable to determine specific epithet **
5683		*Pseudotsuga menziesii*	Douglas-fir		5		4	4	4	4	4	4	4	80%	
5684		*Crataegus mollis*	Downy hawthorn		3		4	4	4	4	4	4	4	80%	
5685		*Crataegus mollis*	Downy hawthorn		11		3	3	3	3	3	3	3	60%	
5686		*Pinus ponderosa*	Ponderosa pine		26		4	4	4	4	4	4	4	80%	
5699		*Malus domestica*	Apple		12		4	3	4	4	4	4	4	77%	
5700		*Pinus attenuata*	Knobcone pine	Exceptional	30		4	4	4	4	4	4	4	80%	
5701		*Pinus attenuata*	Knobcone pine	Exceptional	21		4	3	4	4	4	4	4	77%	Girdling root
5704		*Carya lacinosa*	Shellbark hickory		11		4	4	4	4	4	4	4	80%	
5705		*Eucalyptus spp*	Eucalyptus		0		2	2	1	4	4	4	2	54%	Cut down, suckers sprouting from base
5706		*Abies cephalonica*	Greek fir		1		5	5	5	5	5	5	4	97%	
5709		*Pinus thunbergii*	Japanese black pine		8		4	3	4	4	3	4	3	71%	Wound in Bark
5710		*Pseudotsuga menziesii*	Douglas-fir		19		2	3	2	2	2	2	3	46%	In decline
5711		*Pseudotsuga menziesii*	Douglas-fir		21		4	4	4	4	4	4	4	80%	
5712		*Pinus attenuata*	Knobcone pine	Exceptional	31		4	3	4	4	4	4	4	77%	
5714		*Pinus attenuata*	Knobcone pine		16		3	3	3	3	3	3	3	60%	
5715		*Acer macrophyllum*	Bigleaf maple		17		4	3	4	4	4	4	4	77%	
5716		*Ulmus procera*	English elm		15		4	4	4	4	4	4	4	80%	
5717		*Ulmus procera*	English elm		9		4	3	4	4	4	4	4	77%	
5718		*Ulmus procera*	English elm	Exceptional	42		4	3	4	4	4	4	4	77%	
5719		*Calocedrus decurrens*	Incense cedar		16		4	3	3	4	4	4	4	74%	Wound in bark
5720		*Calocedrus decurrens*	Incense cedar		17		4	4	4	4	4	4	4	80%	

Tree #	Grove	Species	Common Name	Exceptional per City of Seattle	DSH*	Multi-Stem DSH	Crown	Trunk	Branch	Twig	Foliage	Insects/ Diseases	Roots	Condition Rating	Notes
5721		*Thuja plicata 'zebri*	Zebra western red cedar		6		3	3	3	3	3	3	3	60%	Suppressed
5722		*Pinus attenuata*	Knobcone pine	Exceptional	22		4	4	3	4	4	4	4	77%	Low dead limbs
5724		*Malus domestica*	Apple		6		4	4	4	4	4	4	4	80%	
5765		*Calocedrus decurrens*	Incense cedar		21		4	4	4	4	4	4	4	80%	
5766		*Calocedrus decurrens*	Incense cedar		19		4	4	4	4	4	4	4	80%	
5767		*Calocedrus decurrens*	Incense cedar		18		4	4	4	4	4	4	4	80%	
5768		*Calocedrus decurrens*	Incense cedar		22		4	4	4	4	4	4	4	80%	
5769		*Calocedrus decurrens*	Incense cedar		19		4	4	4	4	4	4	4	80%	
5770		*Calocedrus decurrens*	Incense cedar		22		4	4	4	4	4	4	4	80%	
5771		*Eucalyptus gunnii*	Cider gum		8		4	3	4	3	4	3	3	69%	1 stem cut
5772		*Pinus sylvestris*	Scots pine		14		4	3	4	4	4	4	4	77%	
5775		*Thuja plicata*	Western red cedar		23		4	4	4	4	4	4	4	80%	
5776		*Paulownia tomentosa*	Princess tree		9		4	3	4	4	4	4	3	74%	
5777		*Abies bracteata*	Bristlecone fir		4		4	4	4	4	4	4	4	80%	
5778		*Carya lacinosa*	Shellbark hickory		7		4	4	4	4	4	4	4	80%	
5780		*Sequoiadendron giganteum*	Giant redwood	Exceptional	56		4	4	4	4	4	4	4	80%	Ivy present
5781		*Aesculus hippocastanum*	Horse chestnut	Exceptional	34	18+14+7+17+9+14	3	2	3	3	3	3	2	54%	Butt rot
5782	F	*Pinus nigra*	Austrian pine		12		4	4	4	4	4	4	4	80%	
5783	F	*Pinus nigra*	Austrian pine		15		4	4	4	4	4	4	4	80%	
5784	F	*Pinus nigra*	Austrian pine		12		4	4	4	4	4	4	4	80%	
5785	F	*Aesculus hippocastanum*	Horse chestnut		19		4	4	4	4	4	4	4	80%	
5786	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		18		4	4	4	4	4	4	4	80%	
5787	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		9		3	4	4	4	4	4	4	77%	
5788	F	*Cedrus deodara*	Deodar cedar		26		4	4	4	4	4	4	4	80%	
5789	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		13		4	4	4	4	4	4	4	80%	
5790	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		17		4	4	4	4	4	4	4	80%	Homeless camp at base
5819	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		14		4	4	4	4	4	4	4	80%	
5820	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		15		4	4	4	4	4	4	4	80%	
5821	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		14		4	4	4	4	4	4	4	80%	
5822	F	*Cedrus deodara*	Deodar cedar		22		4	4	4	4	4	4	4	80%	
5823	F	*Chamaecyparis lawsoniana*	Port Orford Cedar		18	7.5+5+2+2+3	3	2	4	4	4	4	4	71%	
5824	E	*Cedrus deodara*	Deodar cedar		29		4	4	4	4	4	4	4	80%	
5825	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		12		4	3	4	4	4	4	4	77%	
5826	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		14		4	4	4	4	4	4	4	80%	
5922		*Sequoiadendron giganteum*	Giant redwood	Exceptional	63		4	4	4	4	4	4	4	80%	
5923	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		15		4	4	3	3	3	4	3	69%	Tightly planted grove
5924	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		15		4	4	3	3	3	4	3	69%	Tightly planted grove
5925	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		15		4	4	3	3	3	4	3	69%	Tightly planted grove
5926	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		10		4	4	3	3	3	4	3	69%	Tightly planted grove
5927	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		22		3	4	3	3	3	4	3	66%	Tightly planted grove, rubbing of branches

Tree #	Grove	Species	Common Name	Exceptional per City of Seattle	DSH*	Multi-Stem DSH	Crown	Trunk	Branch	Twig	Foliage	Insects/ Diseases	Roots	Condition Rating	Notes
5928	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		11		4	4	3	3	3	4	3	69%	Tightly planted grove
5929	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		6		4	4	3	3	3	4	3	69%	Tightly planted grove
5930	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		12		4	4	3	3	3	4	3	69%	Tightly planted grove
5931	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		9		4	4	3	3	3	4	3	69%	Tightly planted grove
5932	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		6		4	4	3	3	3	4	3	69%	Tightly planted grove
5933	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		7		4	4	3	3	3	4	3	69%	Tightly planted grove
5934	E	*Pseudotsuga menziesii*	Douglas-fir		16		3	4	3	3	3	4	3	66%	
5935	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		9		3	3	3	3	3	3	3	60%	
5936	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		19		4	4	4	4	4	4	4	80%	
5937	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		20		4	4	4	4	4	4	4	80%	
5938	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		18		4	4	4	4	4	4	4	80%	
5939	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		13		4	4	4	4	4	4	4	80%	
5940	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		4		2	3	3	3	3	3	3	57%	
5941	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		4		3	3	3	3	3	3	3	60%	
5942	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		6		3	3	3	3	3	3	3	60%	
5943	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		4		3	3	3	3	3	3	3	60%	
5944	E	*Cedrus deodara*	Deodar cedar		17		4	4	4	4	4	4	3	77%	
5945	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		24	8.5+9+6+4+2+11 .5+4.5+7+11.5	3	4	3	3	3	4	3	66%	multi-stem
5954	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		12		1	2	2	2	2	4	3	46%	lateral growth
5955	E	*Pseudotsuga menziesii*	Douglas-fir		16		3	3	4	4	4	4	3	71%	
5956	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		12		4	4	4	4	4	4	3	77%	
5957	E	*Pseudotsuga menziesii*	Douglas-fir		29		4	4	4	4	4	4	3	77%	dominant
5958	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		4		4	4	4	4	4	4	3	77%	
5959	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		22		4	4	4	4	4	4	3	77%	
5961	E	*Taxus baccata*	English yew		7	3+3+3+4	2	3	3	3	3	3	3	57%	suppressed
5962	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		17		3	4	3	3	3	3	3	63%	
5963	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		18		3	4	3	3	3	3	3	63%	
5964	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		10		3	4	3	3	3	3	3	63%	suppressed
5965	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		14		4	4	4	4	4	4	4	80%	
5966	E	*Pseudotsuga menziesii*	Douglas-fir		14		4	3	4	4	4	4	4	77%	topped
5967	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		13		3	4	3	4	4	4	4	74%	
5968	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		8		3	3	3	4	4	4	3	69%	co-dominant
5969	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		12		3	4	3	4	4	4	3	71%	
5970	E	*Pseudotsuga menziesii*	Douglas-fir	Exceptional	34		4	4	4	4	4	4	4	80%	
5971	E	*Fraxinus latifolia*	Oregon ash		11	9+6	3	4	3	4	4	4	3	71%	
5972	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		10		3	4	3	4	4	4	3	71%	
5973	E	*Ilex aquifolium*	English holly		4		4	4	4	4	4	4	3	77%	
5974	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		4		3	4	3	4	4	4	3	71%	
5975	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		18		3	4	3	4	4	4	3	71%	
5976	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		16		3	4	3	4	4	4	3	71%	

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5977	E	*Pseudotsuga menziesii*	Douglas-fir		13		3	2	2	3	3	4	4	60%	Low live crown; poor stucture; Remove to thin stand
5978	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		6		3	4	3	4	4	4	3	71%	
5979	E	*Pseudotsuga menziesii*	Douglas-fir		19		3	4	3	4	4	4	3	71%	
5980	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		5		3	4	3	4	4	4	3	71%	
5981	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		13		3	4	3	4	4	4	3	71%	
5982	E	*Pseudotsuga menziesii*	Douglas-fir		16		3	4	3	4	4	4	3	71%	
5983	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		21		3	4	3	4	4	4	3	71%	
5984	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		7		2	2	3	3	4	4	3	60%	
5985	E	*Pseudotsuga menziesii*	Douglas-fir		15		3	4	3	4	4	4	3	71%	
5986	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		7		3	4	3	4	4	4	3	71%	
5987	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		9		3	4	3	4	4	4	3	71%	
5988	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		8		3	4	3	4	4	4	3	71%	
5989	E	*Pseudotsuga menziesii*	Douglas-fir		21		3	4	3	4	4	4	3	71%	
5990	E	*Pseudotsuga menziesii*	Douglas-fir	Exceptional	34		4	4	4	4	4	4	3	77%	
5991	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		10		4	4	4	4	4	4	4	80%	
5992	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		14		4	4	4	4	4	4	4	80%	
5993	E	*Chamaecyparis lawsoniana*	Port Orford Cedar		16		4	4	4	4	4	4	4	80%	
5994	E	*Pseudotsuga menziesii*	Douglas-fir		25		4	4	4	4	4	4	4	80%	Laurel roots girdling base
5995	E	*Acer macrophyllum*	Bigleaf maple	Exceptional	50		3	4	4	3	3	4	3	69%	Limbed up with seam at co-dominance
5996		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		15	6+5+7.5+8	4	4	4	4	4	4	3	77%	
5997		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		13		4	4	4	4	4	4	3	77%	
5998		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		13		2	4	2	3	4	4	3	63%	
5999		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		11		2	4	4	4	4	4	3	71%	Heading cuts of branches, storm damage?
6000		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		13		2	4	4	4	4	4	3	71%	Heading cuts of branches, storm damage?
6001		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		12		4	4	4	4	4	4	3	77%	
6002		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		14		3	4	4	4	4	4	3	74%	Heading cuts of branches, storm damage?
6003		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		17		4	4	4	4	4	4	3	77%	
6004		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		17		3	4	4	4	4	4	3	74%	Heading cuts of branches, storm damage?
6005		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		11		4	4	4	4	4	4	3	77%	
6006		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		17		3	4	4	4	4	4	3	74%	Heading cuts of branches, storm damage?
6007		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		14		4	4	4	4	4	4	3	77%	
6008		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		7		3	4	4	4	4	4	3	74%	suppressed
6009		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		16	5+6+10+9	3	4	4	4	4	4	3	74%	Heading cuts of branches, storm damage?
6010		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		12	5+6+7+3	2	3	3	4	4	4	3	66%	Heading cuts of branches, storm damage?
6011		*Prunus serrulata 'Kwanzan'*	Kwanzan cherry		14		5	5	5	5	5	4	5	97%	
6012		*Prunus serrulata 'Kwanzan'*	Kwanzan cherry		7		5	5	5	5	5	4	5	97%	
6013		*Prunus serrulata 'Kwanzan'*	Kwanzan cherry		14		5	5	5	5	5	4	3	91%	
6014		*Prunus serrulata 'Kwanzan'*	Kwanzan cherry		15		5	5	5	5	5	4	3	91%	
6015		*Prunus serrulata 'Kwanzan'*	Kwanzan cherry		15		4	5	5	5	5	4	5	94%	
6016		*Prunus serrulata 'Kwanzan'*	Kwanzan cherry		14		5	5	5	5	5	4	5	97%	
6017		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		12		4	4	4	4	4	4	3	77%	

Tree #	Grove	Species	Common Name	Exceptional per City of Seattle	DSH*	Multi-Stem DSH	Crown	Trunk	Branch	Twig	Foliage	Insects/ Diseases	Roots	Condition Rating	Notes
6018		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		13		4	4	4	4	4	4	3	77%	
6019		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		14		4	4	4	4	4	4	3	77%	
6020		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		11		4	4	4	4	4	4	3	77%	
6021		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		14		4	4	4	4	4	4	3	77%	
6022		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		13		4	3	4	4	4	4	3	74%	
6023		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		13		4	3	4	4	4	4	3	74%	
6024		*Prunus serrulata 'kwanzan'*	Kwanzan cherry		12		4	4	4	4	4	4	3	77%	
6025		*Pseudotsuga menziesii*	Douglas-fir		24		4	4	4	4	4	4	3	77%	
6026	D	*Calocedrus decurrens*	Incense cedar		9		4	4	4	4	4	3	3	74%	
6027	D	*Ulmus procera*	English elm	Exceptional	30		4	4	4	4	4	3	3	74%	
6028	D	*Cedrus deodara*	Deodar cedar		12		4	4	4	4	4	3	3	74%	
6029	D	*Pseudotsuga menziesii*	Douglas-fir		16		4	4	4	4	4	3	3	74%	
6030	D	*Cedrus deodara*	Deodar cedar		15		4	4	4	4	4	3	3	74%	
6031	D	*Cedrus deodara*	Deodar cedar		17		4	4	4	4	4	3	3	74%	
6032	D	*Picea engelmannii*	Engellman spruce		8		4	4	4	4	4	4	3	77%	
6033	D	*Cedrus deodara*	Deodar cedar		19		4	4	4	4	4	4	4	80%	ivy present
6034	D	*Cedrus deodara*	Deodar cedar		16		4	4	4	4	4	4	4	80%	ivy present
6035	D	*Picea engelmannii*	Engellman spruce		3		4	4	4	4	4	4	4	80%	ivy present
6036	D	*Pseudotsuga menziesii*	Douglas-fir		15		4	4	4	4	4	4	4	80%	ivy present
6037	D	*Pseudotsuga menziesii*	Douglas-fir		26		4	4	4	4	4	4	4	80%	ivy present
6038	D	*Cedrus deodara*	Deodar cedar		9		4	4	4	4	4	4	4	80%	ivy present
6039	D	*Cedrus deodara*	Deodar cedar		19		4	4	4	4	4	4	4	80%	ivy present
6040	D	*Cedrus deodara*	Deodar cedar		28		4	4	4	4	4	4	4	80%	ivy present
6041		*Abies lasiocarpa*	Subalpine fir		8		2	2	2	2	2	2	4	46%	ivy present
6042		*Cedrus deodara*	Deodar cedar		21		4	4	4	4	4	4	5	83%	ivy present
6043		*Acer circinatum*	Vine maple		8	2+3+2+3.5+1.5+ 2+2+3	3	4	3	3	3	4	3	66%	allow natural regeneration at base
6044		*Cedrus deodara*	Deodar cedar		15		4	4	4	4	4	4	3	77%	
6045		*Picea abies*	Norway spruce		15		4	4	4	4	4	2	4	74%	
6046		*Cedrus deodara*	Deodar cedar	Exceptional	30		4	4	4	4	4	4	4	80%	
6047		*Picea abies*	Norway spruce		11		4	4	4	4	4	2	4	74%	
6048		*Abies grandis*	Grand fir		10		4	4	4	4	4	4	4	80%	
6049		*Robinia pseudoacacia*	Black locust	Exceptional	33	24+28.5	4	3	3	4	4	3	2	66%	co-dominant; split at junction
6050		*Cedrus deodara*	Deodar cedar		22		4	5	5	5	5	5	5	97%	
6051		*Robinia pseudoacacia*	Black locust		23		5	3	5	5	5	5	4	91%	
6052		*Robinia pseudoacacia*	Black locust	Exceptional	38		5	4	5	5	5	5	4	94%	burled
6053	C	*Cedrus deodara*	Deodar cedar	Exceptional	40		5	3	5	5	5	5	4	91%	co-dominant at base
6054	C	*Cedrus deodara*	Deodar cedar		26		4	5	5	5	5	5	5	97%	
6055	C	*Abies grandis*	Grand fir		20		4	5	5	5	5	5	5	97%	
6056	C	*Pinus nigra*	Austrian pine		11		4	5	5	5	5	5	5	97%	
6057	C	*Pinus nigra*	Austrian pine		10		4	5	5	5	5	5	5	97%	phototropic

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6058	C	*Cedrus deodara*	Deodar cedar		21		4	5	5	5	5	5	5	97%	
6059	C	*Pinus nigra*	Austrian pine		14		4	5	5	5	5	5	5	97%	
6060	C	*Pinus nigra*	Austrian pine		19		4	5	5	5	5	5	5	97%	
6061	C	*Pinus nigra*	Austrian pine		14		5	2	5	5	5	5	5	91%	
6062	C	*Pinus nigra*	Austrian pine		17		3	5	5	5	5	5	4	91%	phototropic
6063	C	*Cedrus deodara*	Deodar cedar		23		5	5	5	5	5	5	4	97%	
6064	C	*Pinus nigra*	Austrian pine		13		3	5	5	5	5	5	4	91%	phototropic
6065	C	*Picea omorika*	Serbian spruce		5		4	5	5	5	5	5	5	97%	TP-- small
6066	C	*Cedrus atlantica*	Atlas cedar		10		4	5	5	5	5	5	5	97%	
6080	C	*Ulmus procera*	English elm	Exceptional	42		4	5	4	5	5	3	5	89%	leaf miner
6081		*Sequoiadendron giganteum*	Giant redwood	Exceptional	45		4	5	5	5	5	5	4	94%	construction storage at base, not properly protected from damage during construction
6082		*Crataegus mollis*	Downy hawthorn		6		4	3	4	3	3	3	4	69%	
6083		*Crataegus mollis*	Downy hawthorn		8		4	3	4	3	3	3	4	69%	
6084		*Crataegus spp.*	Hawthorn		7		4	3	4	3	3	3	4	69%	unable to identify specific epithet **
6085		*Crataegus spp.*	Hawthorn		8		4	3	4	3	3	3	4	69%	unable to identify specific epithet **
6086		*Acer rubrum*	Red maple		9		5	4	5	3	5	5	4	89%	construction adjacent
7212		*Ulmus procera*	English elm		13		4	4	3	5	3	3	3	71%	Tall Elm, base buried in groundcover, Ivy, Blackberry; could be managed
7213		*Ulmus procera*	English elm		18		4	4	3	5	3	3	3	71%	Tall Elm, base buried in groundcover, Ivy, Blackberry; could be managed
7214		*Ulmus procera*	English elm		8		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7215		*Ulmus procera*	English elm		8		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7216		*Ulmus procera*	English elm		8		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7217		*Arbutus menziesii*	Pacific madrone	Exceptional	12		4	5	5	5	5	5	5	97%	
7218		*Ulmus procera*	English elm		14		3	4	4	5	3	3	3	71%	
7219		*Arbutus menziesii*	Madrone		4		4	5	5	5	5	5	5	97%	
7220		*Ulmus procera*	English elm		5		3	2	3	3	3	3	3	57%	
7221		*Acer macrophyllum*	Bigleaf maple		6		4	4	4	4	4	4	4	80%	Ivy
7222		*Ulmus procera*	English Elm		5		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed

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7223		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7224		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7225		*Ulmus procera*	English Elm		5		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7226		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7227		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	Grove of young trees with low live crown ratios, tall and skinny trunks, seeded in, ivy & daphne climbing, leaf minor, could be selected and managed
7228		*Populus nigra*	Lombardy poplar		11		3	4	3	3	3	3	3	63%	Low live crown ratio
7229		*Ulmus procera*	English Elm		5		3	2	3	3	3	3	3	57%	
7233		*Cedrus deodara*	Deodar cedar		13		3	4	3	5	5	5	3	80%	
7234		*Cedrus deodara*	Deodar cedar		17		3	4	4	5	5	5	3	83%	
7235		*Thuja plicata*	Western red cedar		1		5	5	5	5	5	5	3	94%	
7236		*Cedrus deodara*	Deodar cedar		28		5	5	4	5	5	5	3	91%	
7237		*Tilia cordata*	Littleleaf Linden		14		4	3	4	4	4	4	3	74%	Co-Dom trunk, large branches
7238		*Populus nigra*	Lombardy poplar		14		3	3	2	3	3	3	3	57%	In decline, RISK of falling parts
7239		*Populus nigra*	Lombardy poplar		17		3	3	2	3	3	3	3	57%	In decline, RISK of falling parts
7240		*Populus nigra*	Lombardy poplar	Exceptional	50		3	3	2	3	3	3	3	57%	In decline, RISK of falling parts
7241		*Populus nigra*	Lombardy poplar		16		3	3	3	3	3	3	3	60%	
7242		*Populus nigra*	Lombardy poplar		19		3	4	3	3	3	3	3	63%	
7243		*Populus nigra*	Lombardy poplar		17	13, 11	3	4	3	3	3	3	3	63%	
7244		*Tilia cordata*	Littleleaf Linden		15	10, 8, 8	4	3	5	5	5	5	3	86%	
7245		*Ulmus procera*	English Elm		17		4	4	4	4	3	3	3	71%	
7248		*Laburnum anagyroides*	Golden chain tree		5	3, 4	3	3	3	3	3	3	3	60%	
7249		*Ulmus procera*	English Elm		7		3	3	3	3	3	3	3	60%	
7250		*Ulmus procera*	English Elm		7		3	3	3	3	3	3	3	60%	
7251		*Ulmus procera*	English Elm		7		3	3	3	3	3	3	3	60%	
7254		*Ulmus procera*	English Elm		4		3	3	3	3	3	3	3	60%	
7255		*Ulmus procera*	English Elm		8	5,5,4	3	3	3	3	3	3	3	60%	
7256		*Ulmus procera*	English Elm		6		3	3	3	3	3	3	3	60%	
7257		*Ulmus procera*	English Elm		8		3	3	3	3	3	3	3	60%	
7258		*Laburnum anagyroides*	Golden chain tree		3		4	3	3	5	4	4	3	74%	
7259		*Ulmus procera*	English Elm		4		3	3	3	5	3	3	3	66%	Muli-trunked at base
7260		*Ulmus procera*	English Elm		13	10, 5, 5	4	2	3	3	3	3	3	60%	

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7261		*Prunus emarginata*	Bitter Cherry		7		3	3	3	3	3	3	3	60%	
7262		*Ulmus procera*	English Elm		13	8, 6, 6	3	2	3	3	3	3	3	57%	Multi-trunked at base, roots in blackberry and ivy
7263		*Ulmus procera*	English Elm		7	5,5	3	2	3	3	3	3	3	57%	Multi-trunked at base, roots in blackberry and ivy
7264		*Fraxinus latifolia*	Oregon ash		10	7.5, 7	3	2	3	3	3	3	3	57%	Multi-trunked at base, roots in blackberry and ivy
7265		*Ulmus procera*	English Elm		9	8, 3	3	2	3	3	3	3	3	57%	Multi-trunked at base, roots in blackberry and ivy
7266		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	
7267		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	
7268		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	
7269		*Ulmus procera*	English Elm		7		3	2	3	3	3	3	3	57%	
7270		*Ulmus procera*	English Elm		6		3	2	3	3	3	3	3	57%	
7271		*Ulmus procera*	English Elm		10		3	2	3	3	3	3	3	57%	
7272		*Ulmus procera*	English Elm		9		3	2	3	3	3	3	3	57%	
7273		*Ulmus procera*	English Elm		19	10.25, 11.25, 11.5	4	2	3	3	3	3	3	60%	
7274		*Ulmus procera*	English Elm		6		3	3	3	3	3	3	3	60%	
7275		*Arbutus menziesii*	Pacific madrone	Exceptional	31	25+25	3	3	3	3	3	3	4	63%	Multi-trunked at base
7276		*Ulmus procera*	English Elm		8		2	3	2	3	3	3	4	57%	
7277		*Cedrus deodara*	Deodar cedar		25	25	5	5	4	4	4	5	5	91%	
7278		*Ulmus procera*	English Elm		7		3	3	3	3	4	4	5	71%	
7279		*Ulmus procera*	English Elm		9		4	4	4	4	4	4	5	83%	
7280		*Ulmus procera*	English Elm		10	10	4	4	4	4	4	4	5	83%	
7281		*Arbutus menziesii*	Pacific madrone	Exceptional	21		5	5	5	5	4	4	5	94%	
7282		*Ulmus procera*	English Elm		7	6.5	3	3	3	3	4	4	5	71%	
7283		*Ulmus procera*	English Elm		20		4	4	4	4	4	4	5	83%	
7284		*Ulmus procera*	English Elm		10		4	3	3	3	4	4	5	74%	suppressed
7285		*Ulmus procera*	English Elm		26	17+20	5	4	5	5	4	4	5	91%	
7286		*Malus domestica*	Apple		14	9+11	3	3	3	2	3	4	4	63%	suppressed
7287		*Quercus phellos*	Willow oak		18		5	4	3	5	5	5	3	86%	construction adjacent
7288		*Cedrus deodara*	Deodar cedar		18		5	5	3	4	5	5	2	83%	construction 4 feet away
7289		*Acer macrophyllum*	Bigleaf maple		13		3	3	2	3	2	2	2	49%	In decline; mostly stump sprouts
7290		*Acer macrophyllum*	Bigleaf maple		10	9+4	3	2	3	2	2	2	3	49%	
7291		*Acer macrophyllum*	Bigleaf maple		4		3	3	3	3	4	4	3	66%	Phototropic lean on steep slope, good young specimen
7292	A	*Cedrus deodara*	Deodar cedar		17		4	5	3	4	5	5	3	83%	
7293	A	*Cedrus deodara*	Deodar cedar		17		4	5	3	5	5	5	3	86%	
7294	A	*Cedrus deodara*	Deodar cedar		12		4	5	4	5	4	5	4	89%	
7295	A	*Cedrus deodara*	Deodar cedar		12		4	4	4	5	3	3	3	74%	chlorotic
7296		*Acer macrophyllum*	Bigleaf maple		17	11.5, 12	4	3	4	5	5	5	4	86%	
7297		*Populus nigra*	Lombardy poplar		29		3	3	3	3	3	3	3	60%	
7298	A	*Cedrus deodara*	Deodar cedar		12		4	4	4	4	4	5	3	80%	
7299	A	*Cedrus deodara*	Deodar cedar		18		3	5	4	4	5	5	3	83%	
7300	A	*Cedrus deodara*	Deodar cedar		15		5	4	4	4	5	5	3	86%	

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7301	A	*Cedrus deodara*	Deodar cedar		14		5	4	4	4	5	5	3	86%	
7302		*Acer macrophyllum*	Bigleaf maple		15		4	5	3	3	4	4	4	77%	
7303		*Populus nigra*	Lombardy poplar	Exceptional	38		3	4	3	4	4	3	3	69%	
7304	A	*Cedrus deodara*	Deodar cedar		16		5	5	4	5	5	5	3	91%	
7305	A	*Cedrus deodara*	Deodar cedar		14		4	5	5	5	4	5	3	89%	
7306	A	*Cedrus deodara*	Deodar cedar		16		4	5	4	4	5	5	3	86%	
7307		*Populus nigra*	Lombardy poplar		29		4	4	4	4	4	3	3	74%	
7308		*Thuja plicata*	Western red cedar		2		3	4	4	4	4	5	3	77%	
7309	A	*Cedrus deodara*	Deodar cedar		17		4	5	5	4	5	5	3	89%	
7310	A	*Cedrus deodara*	Deodar cedar		15		4	5	4	4	5	5	3	86%	
7311	A	*Cedrus deodara*	Deodar cedar		15		4	5	4	4	5	5	3	86%	
7312		*Populus nigra*	Lombardy poplar		29		4	4	4	4	4	4	4	80%	
7313	A	*Cedrus deodara*	Deodar cedar		16		4	5	4	4	5	5	4	89%	
7314	A	*Cedrus deodara*	Deodar cedar		14		4	5	5	4	5	5	4	91%	
7315	A	*Cedrus deodara*	Deodar cedar		20		5	5	4	4	5	5	3	89%	
7316		*Populus nigra*	Lombardy poplar		27		4	4	4	4	4	4	3	77%	
7317		*Populus nigra*	Lombardy poplar		25		3	4	4	4	4	4	3	74%	
7318	B	*Cedrus deodara*	Deodar cedar		18		5	5	5	5	5	5	4	97%	
7319	B	*Cedrus deodara*	Deodar cedar		15		5	5	5	5	5	5	4	97%	
7320		*Acer macrophyllum*	Bigleaf maple		5		5	5	5	5	5	5	4	97%	
7321		*Ulmus procera*	English Elm		5		2	3	2	2	2	2	3	46%	
7322		*Ulmus procera*	English Elm		5		2	3	2	2	2	2	3	46%	
7323	B	*Cedrus deodara*	Deodar cedar		15		4	5	5	5	5	5	4	94%	
7324	B	*Cedrus deodara*	Deodar cedar		15		4	5	5	5	5	5	4	94%	
7325		*Acer macrophyllum*	Bigleaf maple		27		4	5	5	5	5	5	4	94%	
7326	B	*Cedrus deodara*	Deodar cedar		13		5	5	5	5	5	5	4	97%	
7327	B	*Cedrus deodara*	Deodar cedar		13		5	5	5	5	5	5	4	97%	
7328	B	*Cedrus deodara*	Deodar cedar		14		5	5	5	5	5	5	4	97%	
7329	B	*Cedrus deodara*	Deodar cedar		16		4	3	4	4	5	5	3	80%	trunk wounds
7330	B	*Cedrus deodara*	Deodar cedar		15		5	5	5	5	5	5	4	97%	
7331	B	*Cedrus deodara*	Deodar cedar		12		5	5	5	5	5	5	4	97%	
7332	B	*Cedrus deodara*	Deodar cedar		19		5	5	5	5	5	5	4	97%	
7333		*Crataegus spp*	Hawthorn		6	4+4+4	1	1	1	1	3	1	2	29%	Sucker emerging from base with new growth. Unable to determine specific epithet. **
7334		*Populus trichocarpa*	Black cottonwood		13		4	3	4	4	4	4	4	77%	
7335		*Arbutus menziesii*	Pacific madrone	Exceptional	23		5	5	5	5	5	3	5	94%	typical of species, good specimen
7336		*Populus trichocarpa*	Black cottonwood		31		4	4	4	4	4	4	4	80%	
7337		*Crataegus spp.*	Hawthorn		8	3+4+5+4	4	2	3	3	3	3	3	60%	Unable to identify specific epithet. **
7338		*Crataegus spp.*	Hawthorn		4		2	2	2	2	2	2	2	40%	Poor specimen
7339		*Crataegus spp.*	Hawthorn		6		3	1	3	3	3	3	2	51%	Poor specimen- damaged
7340		*Crataegus spp.*	Hawthorn		8	5+5	4	4	4	4	4	3	4	77%	
7341		*Acer macrophyllum*	Bigleaf maple		8		4	2	4	4	4	4	4	74%	

Tree #	Grove	Species	Common Name	Exceptional per City of Seattle	DSH*	Multi-Stem DSH	Crown	Trunk	Branch	Twig	Foliage	Insects/ Diseases	Roots	Condition Rating	Notes
7342		*Rhus typhina*	Staghorn sumac		10	5+5+4+3+3+3+2+2	4	4	4	4	4	4	4	80%	
7343		*Crataegus mollis*	Downy hawthorn		13	6+7+10	4	3	4	4	4	4	3	74%	
7344		*Crataegus mollis*	Downy hawthorn		13	5+9+7	4	3	4	4	4	4	3	74%	
7345		*Crategus azarolus*	Azarole hawthorn		10		4	3	4	4	4	4	3	74%	
7346		*Crataegus punctata*	Dotted hawthorn		7		4	3	4	4	4	4	3	74%	
7347		*Crataegus mollis*	Downy hawthorn		6		3	3	3	4	4	4	3	69%	cracked limb
7348		*Populus trichocarpa*	Black cottonwood		53		4	3	4	4	4	4	2	71%	
7349		*Acer macrophyllum*	Bigleaf maple		22		3	3	4	4	4	4	2	69%	girdling root
7350		*Quercus coccinea*	Scarlet oak		14		4	4	4	4	4	4	4	80%	
7351		*Quercus coccinea*	Scarlet oak		11		4	4	4	4	4	4	4	80%	
7352		*Quercus palustris*	Pin oak		9		4	4	4	4	4	4	4	80%	
7353		*Quercus palustris*	Pin oak		8		4	4	4	4	4	4	4	80%	
7354		*Quercus palustris*	Pin oak		8		4	4	4	4	4	4	4	80%	
7355		*Quercus palustris*	Pin oak		9		4	4	4	4	4	4	4	80%	
7356		*Acer macrophyllum*	Bigleaf maple		27		3	2	3	4	4	4	3	66%	central leader gone
7357		*Acer macrophyllum*	Bigleaf maple		29		3	3	3	4	4	4	3	69%	dead limbs
7358		*Cornus florida*	Flowering dogwood		3		3	4	4	4	4	4	4	77%	mower damage
7359		*Sorbus aucuparia*	Mountain ash		3		4	4	4	4	4	4	4	80%	mower damage
7360		*Cornus florida*	Flowering dogwood		4		4	4	4	4	4	4	4	80%	mower damage
7361		*Sorbus aucuparia*	Mountain ash		2		4	2	2	4	4	4	4	69%	mower damage
7362		*Cornus florida*	Flowering dogwood		4	3+2	4	4	4	4	4	4	4	80%	mower damage
7363		*Sorbus aucuparia*	Mountain ash		1		4	2	4	4	4	4	4	74%	basal injury by lawn mower
7364		*Cornus kousa*	Kousa dogwood		2		4	4	4	4	4	4	4	80%	
7365		*Cornus florida*	Flowering dogwood		3		4	4	4	4	4	4	4	80%	mower damage
7366		*Quercus rubra*	Red oak		14		4	4	4	4	4	4	3	77%	
7367		*Quercus rubra*	Red oak		13		4	4	4	4	4	4	3	77%	
7368		*Cornus florida*	Flowering dogwood		5		4	4	4	4	4	4	3	77%	mower damage
7369		*Cornus florida*	Flowering dogwood		6		4	4	4	4	4	4	3	77%	mower damage
7370		*Cornus florida*	Flowering dogwood		6		4	4	4	4	4	4	3	77%	mower damage
7371		*Cornus florida*	Flowering dogwood		4		4	4	4	4	4	4	3	77%	mower damage
7372		*Cornus florida*	Flowering dogwood		5		4	4	4	4	4	4	3	77%	mower damage
7373		*Pyrus spp.*	Flowering pear	**	15	5+5+5+4+4+4+9	4	2	3	4	4	4	4	71%	Unable to identify specific epithet. **
7374		*Pyrus spp.*	Flowering pear	**	14	7+7+4+4+4+4+4+4	4	2	3	4	4	4	4	71%	unable to identify specific epithet. **
7375		*Quercus rubra*	Red oak		8		4	2	3	4	4	4	4	71%	
7376		*Quercus rubra*	Red oak		7		4	2	3	4	4	4	4	71%	
7377		*Quercus rubra*	Red oak		7		4	2	3	4	4	4	4	71%	
7378		*Acer circinatum*	Vine maple		9		4	2	3	4	4	4	4	71%	
7379		*Pyrus spp.*	Flowering Pear	**	13	2+4+3+4+6+3+3+5+7	4	2	3	4	4	4	3	69%	Unable to identify specific epithet. **

Tree #	Grove	Species	Common Name	Exceptional per City of Seattle	DSH*	Multi-Stem DSH	Crown	Trunk	Branch	Twig	Foliage	Insects/ Diseases	Roots	Condition Rating	Notes
7380		*Cornus florida*	Flowering dogwood		7		4	4	4	4	4	4	4	80%	
7381		*Cornus florida*	Flowering dogwood		10		4	4	4	4	4	4	4	80%	
7382		*Cornus florida*	Flowering dogwood		8		4	4	4	4	4	4	4	80%	
7383		*Cornus florida*	Flowering dogwood		3		3	3	4	4	4	4	4	74%	
7384		*Corylus cornuta*	Beaked hazelnut		8	15 x 2"	4	4	4	4	4	4	4	80%	
7385		*Cornus florida*	Flowering dogwood		4		2	3	4	4	4	4	4	71%	
7386		*Cornus florida*	Flowering dogwood		4		4	3	4	4	4	4	4	77%	
7387		*Cornus florida*	Flowering dogwood		6		4	3	4	4	4	4	4	77%	
7388		*Cornus florida*	Flowering dogwood		7		4	3	4	4	4	4	4	77%	
7389		*Cornus florida*	Flowering dogwood		5		4	3	4	4	4	4	4	77%	
7390		*Cornus florida*	Flowering dogwood		4		4	3	4	4	4	4	4	77%	
7391		*Populus nigra*	Lombardy poplar		4		4	4	4	4	4	4	4	80%	
7392		*Quercus rubra*	Red oak		7		4	4	4	4	4	4	4	80%	
7393		*Quercus rubra*	Red oak		7		4	4	4	4	4	4	4	80%	
7394		*Quercus rubra*	Red oak		7		4	4	4	4	4	4	4	80%	
7395		*Quercus rubra*	Red oak		9		4	4	4	4	4	4	4	80%	
7396		*Quercus rubra*	Red oak		7		4	4	4	4	4	4	4	80%	
7397		*Acer macrophyllum*	Bigleaf maple		6		4	4	4	4	4	4	4	80%	
7398		*Acer macrophyllum*	Bigleaf maple		27		5	3	3	4	4	4	3	74%	limb conflicts
9274		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9275		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9276		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9277		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9278		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9279		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9280		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9281		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9282		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9283		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9284		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9285		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9286		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
9287		*Pseudotsuga menziesii*	Douglas-fir		1		5	5	5	5	5	5	4	97%	New planting
		5 large multi-stemed beaked hazelnuts not marked between trees #7254 & #7275		*** Further review needed when tree is in leaf.*											*** Further review needed when tree is in leaf.*

Appendix C

Transportation Technical Memorandum

heffron transportation, inc.

TECHNICAL MEMORANDUM

Project: North Link FSEIS Addendum
2010 Proposed Action for University of Washington Station
Montlake Triangle Project

Subject: Traffic Operations Analysis and
Construction Transportation Analysis

Date: December 1, 2010

Author: Marni C. Heffron, P.E., P.T.O.E.

This Technical Memorandum presents detailed traffic analysis to determine the effect of changing the proposed pedestrian access to the University of Washington's Link Light Rail Station. In addition, it evaluates potential construction-related impacts of building the proposed project.

1. Project Description

The Sound Transit North Link Final Supplemental Environmental Impact Statement was issued in April 2006 (referred to herein as 2006 FSEIS). The 2006 FSEIS identified a Preferred Alternative (referred to herein as 2006 Alternative) for the North Link of Sound Transit's route through Seattle that included a station at University of Washington, on the east side of Montlake Boulevard, near Husky Stadium. The University of Washington Station identified in the 2006 FSEIS included a grade-separated pedestrian crossing of Montlake Boulevard, via a tunnel or bridge, with an option for an extended tunnel or bridge across NE Pacific Place and the Burke-Gilman Trail to provide access to the Rainier Vista corridor and central campus. Due to concerns about increased volumes of pedestrians crossing the Burke-Gilman Trail, Sound Transit and FTA committed to developing a grade-separated crossing of the trail and NE Pacific Place, via either a tunnel or bridge, to maintain connectivity between the University of Washington Station and the campus. This mitigation measure is documented in the NEPA Record of Decision (ROD) issued in June 2006.

Subsequent to issuance of the FSEIS and ROD in 2006, Sound Transit, the University of Washington and the Seattle Department of Transportation evaluated various options for pedestrian connections between the University of Washington Station (near Husky Stadium) and central campus as part of the University of Washington Station Final Design. The current design, referred to herein as the **2006 Alternative**, proposes a 670-foot long[1] grade separated pedestrian bridge across Montlake Boulevard, NE Pacific Place, and the Burke-Gilman Trail. The bridge would extend from the top of the escalator at

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[1] Length of pedestrian bridge was measured from the 100% Submittal of the Sound Transit Link Contract U250/UW Station Finishes (1/15/10). The bridge length was measured from the top of the escalator to the at grade landing near Rainier Vista.

the University of Washington Link Light Rail Station to central campus near the Rainier Vista corridor. The bridge would also include stairs and elevator access from the bridge to the northeast portion of the Montlake Triangle (see Figure 1).

The **2010 Proposed Action** refines and incorporates certain modifications to the 2006 Alternative, primarily related to the pedestrian connections between the University of Washington Station, Rainier Vista and central campus. In general, the 2010 Proposed Action would implement the pedestrian bridge crossing of Montlake Boulevard NE, NE Pacific Place and the Burke-Gilman Trail evaluated in the 2006 SFEIS with a grade-separated pedestrian access consisting of the following:

- A pedestrian and bicycle access bridge over Montlake Boulevard NE that would connect the University of Washington Station to the Montlake Triangle, including:
  - An approximately 30- to 34-foot wide, 95-foot long bridge from the University of Washington Station over Montlake Boulevard NE to the Montlake Triangle;
  - Stairs and an elevator from the proposed bridge to the Montlake Triangle on the west side of Montlake Boulevard NE to facilitate transfers to local King County Metro bus service;
  - A bicycle ramp located between the University of Washington Station and Montlake Boulevard NE that would provide access to the bridge; and,
  - Side-by-side at-grade paths for bicycles and pedestrians located between the University of Washington Station and Montlake Boulevard NE.
- The Montlake Triangle would be improved with the following:
  - New landscaping and pedestrian/bicycle facilities to connect the University of Washington Station with Rainier Vista and central campus; enhance the Montlake Triangle as an entry to campus; and provide pathways to bus transfers on the Montlake Triangle;
  - A relocated and improved west-bound bus stop on the Montlake Triangle along NE Pacific Street with an extended bus zone for transit coaches and shelters for riders;
  - An improved south-bound bus stop on the west side of Montlake Boulevard NE just south of NE Pacific Place; and,
  - An improved east-bound bus stop on the south side of NE Pacific Place.
- A landscaped land bridge over a lowered NE Pacific Place and a modified Burke-Gilman Trail.
  - NE Pacific Place would be lowered approximately 20 feet to allow vehicles to pass under the land bridge. All existing vehicle lanes and King County Metro transit facilities would be accommodated, and the unsignalized mid-block crosswalks eliminated. Existing Metro transit facilities would be improved within the lowered NE Pacific Place to include: expanded bus layover area, bus shelters with lighting, trolley poles with overhead wires, street lights, sidewalk improvements, and way-finding signage.
  - The Burke-Gilman Trail in the vicinity of the land bridge would be improved to grade-separate the Burke-Gilman Trail from Rainier Vista. Through the project area, the Burke-Gilman Trail would be widened to provide a 14-foot wide pedestrian and bicycle path. Two-foot wide gravel shoulders would be provided at the edges of the path. Design of the trail would not preclude future widening by the University for a total trail width of 30-feet. The new trail would be constructed parallel to the lowered NE Pacific Place under the land bridge, although the elevation of the trail would be above the roadway to minimize the grades on the trail. Two connecting paths would be provided linking the Burke-Gilman Trail

with Rainier Vista to provide access to central campus. The new trail section would transition both in grade and alignment to meet the existing trail section east and west of the Montlake Triangle intersections (NE Pacific Place/NE Pacific Street; NE Pacific Place/Montlake Boulevard NE).

- The land bridge would be an hour glass shape to minimize the width of the land bridge over NE Pacific Place and the Burke-Gilman Trail. The width of the bridge would range from approximately 35 feet in the center to approximately 100 feet at the north and south ends.

- Improvements to the Lower Rainier Vista to enhance pedestrian connections between the University of Washington Station and the central campus.

  - Filling of the existing Rainier Vista depression located immediately north of NE Pacific Place with construction spoils associated with the lowering of NE Pacific Place and/or construction of the University of Washington Station. The filling of this depression is intended to provide a larger and more welcoming pedestrian environment.
  - Removal of the existing cherry trees2 in the Lower Rainier Vista to eliminate the confinement and partial view blockage they produce.
  - Provision of new landscaping and pedestrian paths.

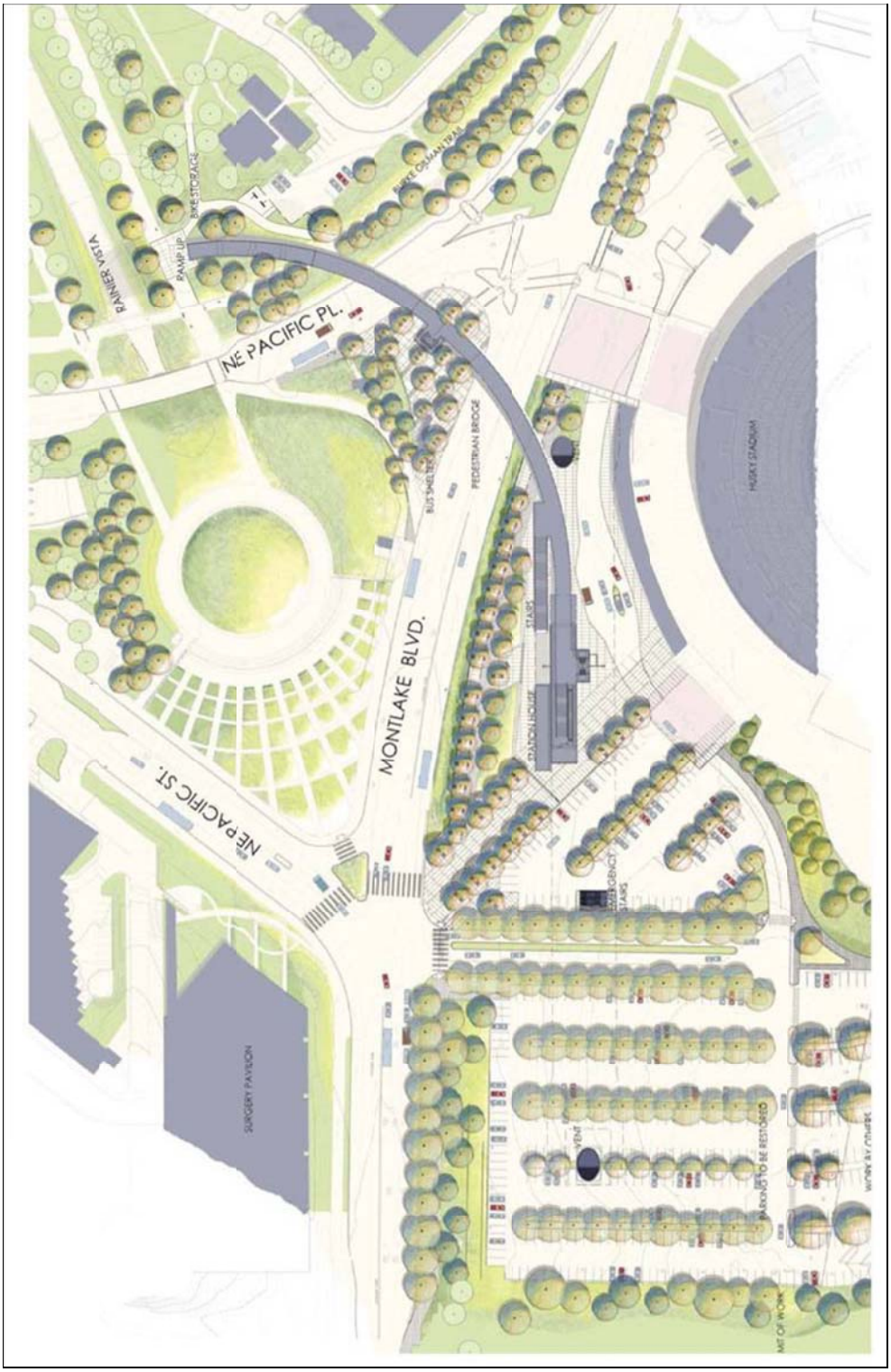
- Provision of new ADA accessible pathways to accommodate pedestrians along the Montlake Triangle and Rainier Vista to central campus.

Figures 1 and 2 illustrate the two conditions evaluated.

The 2010 Proposed Action would be designed to be compatible with other future transportation projects in the area. A bicycle ramp would be constructed on the west side of the light rail station connecting to the new pedestrian bridge. In the future, this bicycle ramp would be connected to the new bicycle/pedestrian path on the east side of the second Montlake Boulevard Bascule Bridge that is proposed as part of the SR 520 Preferred Alternative[3]. In addition, new pedestrian paths would be constructed linking Rainier Vista and the Montlake Triangle to NE Pacific Street. The City of Seattle is considering changes to the existing traffic signal on NE Pacific Street at the UW Medical Center's East Driveway so that pedestrians could cross the street at this signal. These future projects are not a part of the 2010 Proposed Action.

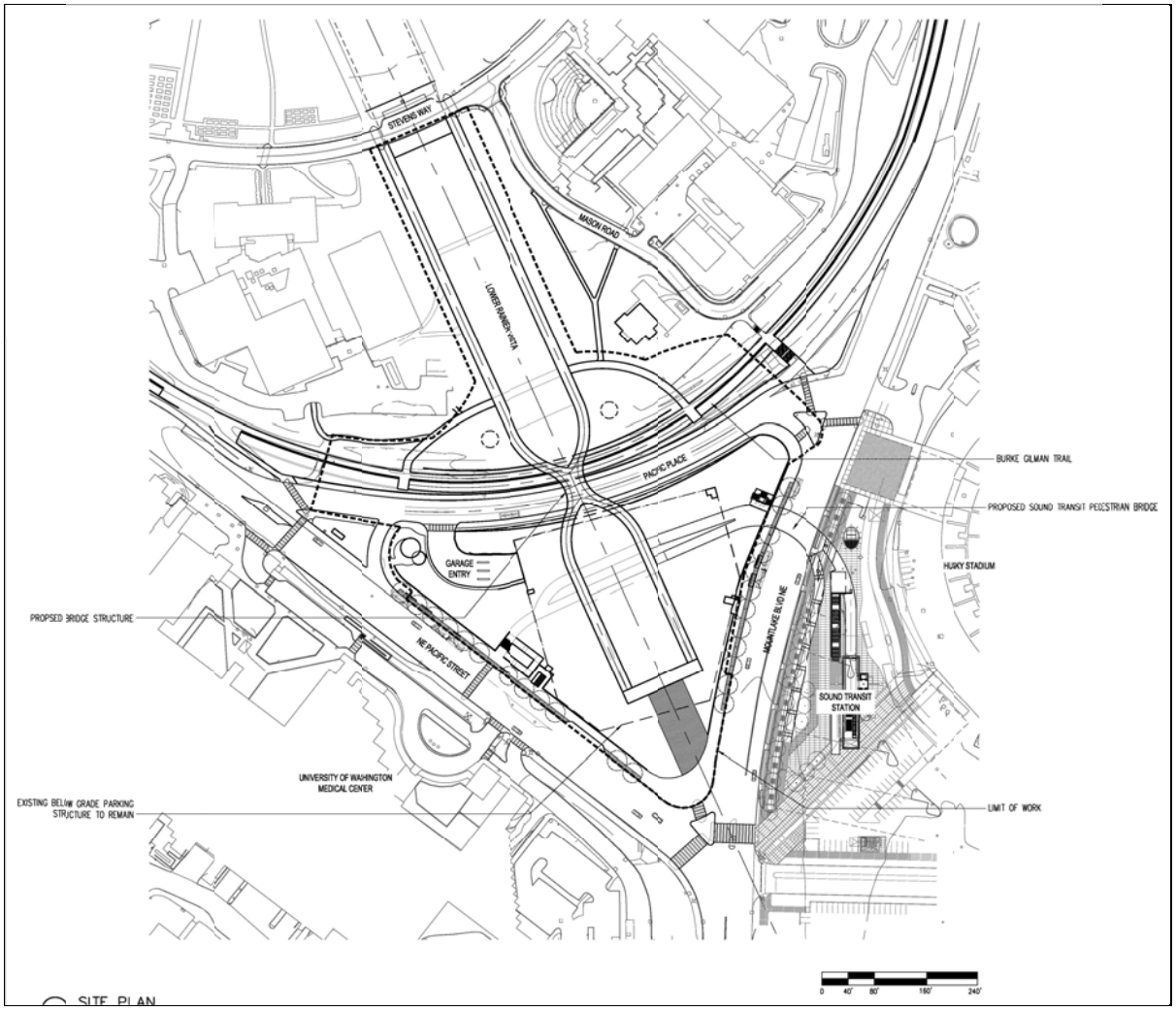
[3] Washington State Department of Transportation, April 29, 2010.
See www.wsdot.wa.gov/News/2010/04/29_SR520PreferredAlternative.htm

Figure 1. 2006 Alternative



Source: Sound Transit.

Figure 2. 2010 Proposed Action



Source: Gustafson Guthrie Nichol Ltd, November 2010.

2. Pedestrian Operations

This section describes how the 2010 Proposed Action would change pedestrian operations compared to the 2006 Alternative. It also presents information related to Sound Transit passenger volumes and how those passengers will disperse to the University of Washington campus and/or transfer to local King County Metro bus service.

Background Pedestrian Volumes

Existing pedestrian and bicycle counts were performed in the vicinity of the University of Washington Station on September 30, 2008. These volumes were then projected to year 2030 assuming a compound annual growth rate of 1% per year. These are the background pedestrian volumes that would use the crosswalk locations for the No Build Alternative (if Link were not built), and are summarized in Table 1.

Sound Transit Passenger Volumes

The number of Link passengers that could cross at various locations was derived from information in the *University of Washington Station Pedestrian and Bicycle Evaluation* (Grijalva Engineering, December 2008).[4] This report was prepared for Sound Transit and evaluated pedestrian needs associated with the bridge proposed to implement the 2006 Alternative. The pedestrian volumes were based on the projected number of passenger boardings at the University of Washington station and estimates about the potential destinations of those passengers. This analysis uses the 2030 passenger boarding projections with the Link light rail line completed between S 200th Street and Northgate—5,950 passenger peak hour boardings at the University of Washington Station .[5] As described in the next section of this report, all pedestrian analyses were performed for the peak passenger volumes that can exit the station in a one-minute period. This volume is constrained by the station's escalator and elevator capacity. Therefore, even if passenger volumes were to increase in the future (e.g., with future extensions of the light rail line to Lynnwood), the maximum passenger flow to the station above ground plaza cannot increase.

The pedestrian volumes were distributed to various walking routes based on the trip distribution pattern originally prepared for the *University of Washington Station Pedestrian and Bicycle Evaluation.* The end destinations are the same for all of the alternatives evaluated; however, some of the pedestrian volume is expected to change to follow the most convenient path. The peak period distribution pattern for the 2010 Proposed Action is shown on Figure 3. Table 1 compares the commuter peak hour pedestrian volumes for various routes and facilities for the 2006 Alternative and the 2010 Proposed Action.

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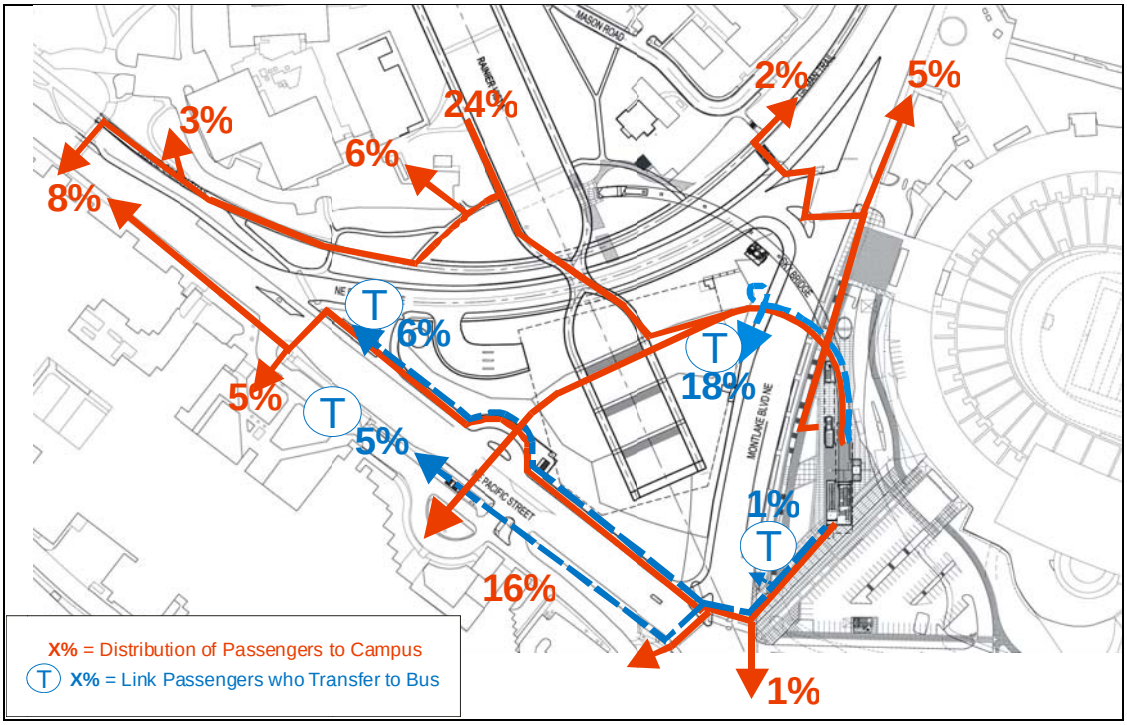
[4] Updated volumes were presented in a separate spreadsheet from Sound Transit (January 11, 2009).

[5] When the University of Washington Station first opens in 2016, it would be the interim end of the line. At that time, the station is expected to have 4,730 peak hour boardings. Therefore, the 5,950 boardings projected once the line is extended represent the worst-case condition.

Figure 3. Peak Distribution Pattern for Link Passengers
UW Station Terminus, 2010 Proposed Action



Source: Sound Transit Link Ridership Forecast and Distribution, January 2009. Reassigned to routes by Heffron Transportation.

Table 1. Peak Hour Pedestrian Crossing Volumes - Year 2030 with 200th to Northgate

Origin & Destination of Pedestrians	Year 2030 No Build Alt. Peds & Bikes [b]	Additional Peds per Hour to/from Link Station: 2006 Alternative Original Pedestrian Bridge[a]	Additional Peds per Hour to/from Link Station: Proposed Action [c] New Bridge + Rainier Vista
Station Platform	0	5,950	5,950
Pedestrian Bridge (Station to Rainier Vista)	0	3,240	3,470
Pedestrian Bridge West-side Stair/Elevator (to Northeast corner of Triangle)	0	700	700
Montlake Blvd/Pacific Street Intersection			
North Leg (Montlake Blvd)	570	1,250	1,020
West Leg (Pacific Street)	360	1,070	880
Northwest Corner (Island to Triangle)	310	180	140
East Leg (Parking Lot Driveway)	410	60	60
Montlake Blvd/Pacific Place Intersection			
South Leg (Montlake Blvd)	80	340	340
West Leg (Pacific Place)	20	0	0
East Leg (Husky Stadium Driveway)	140	300	300
Future Mid-Block Crossing of Pacific Street[d]	Unknown	Not Applicable	230
Pacific Street/Pacific Place Intersection			
East Leg (Pacific Street to Med Center)	560	300	260
North Leg (Pacific Place)	340	0	0
Pacific Place Mid-Block Crossings	200	90	0

a. Source: Sound Transit, derived from University of Washington Station Pedestrian and Bicycle Evaluation (Grijalva Engineering, December 2008). Volumes in the Sound Transit spreadsheet dated January 11, 2009 were used except as noted. It assumes the complete Link light rail corridor from S 200th Street to Northgate. Year 2030 volumes at the station plaza are higher than the 2016 condition with the University Station as the interim terminus.

b. Projected from existing pedestrian and bicycle counts performed on September 30, 2008 for the above referenced study.

c. Pedestrian volumes were reassigned to different routes by Heffron Transportation, Inc. based on information about the on-campus origins and destinations of Link commuters.

d. Future pedestrian crossing would be added to existing signal. This is not a part of the 2010 Proposed Action.

Passenger Surges

Passengers who arrive at the University of Washington Station by Link light rail train will exit the station in surges.[6] Sound Transit had estimated the hourly number of passengers during the peak commute hours as well as the number of passengers expected on the peak train. These estimates are summarized in Table 2 for the year 2016 condition, when the University of Washington Station would be the north terminus of the Link line, and the year 2030, when the line would be extended to Northgate. This shows that in the year 2030, the station would generate 5,950 passenger trips per hour with 384 passengers on the peak train. In the morning, 278 of these passengers would arrive by train and exit the station and 106 would enter the station to take the train elsewhere. In the afternoon, these peak directions would be reversed, but the volumes are assumed to be identical.

Trains are expected to operate with five-minute headways (time between consecutive arrivals) in both directions, which provides passengers the luxury of not having to use a schedule. Passengers who take the train elsewhere from the University of Washington would likely walk to the station in a steady flow with the peak train's volume spread evenly over the five minutes between trains. However, passengers who arrive on the peak train would exit the station in a surge. It is expected that it could take three minutes for all of a train's passengers to reach the station plaza from the platforms. It is possible that higher passenger volumes or a faster exit rate could occur; therefore, the maximum surge volume was evaluated. The maximum volume that can exit the station in a one-minute period will be constrained by the capacity of the station's escalators and elevators. Sound Transit has conservatively estimated that the escalators could accommodate up to 198 passengers per minute, and the elevator could accommodate 20 passengers per minute for a total of 218 passengers.[7] No similar surge in the number of passengers that enter the station is expected except immediately following special events such as a Husky football or basketball games. The average number of passengers per minute and the peak passengers per minute are summarized in Table 2. Pedestrian analyses performed for sidewalks and bridges assumed the "peak passengers per minute."

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[6] Sound Transit refers to "arrivals" and "departures" for the train portion of the trip. Arrivals are those who have arrived at the station by train, and then exit the station to reach the UW campus. Departures are the reverse trip. For clarity, this analysis will use the terms "Enter Station" and "Exit Station" to refer to the pedestrian direction at the station plaza.

[7] Source: Sound Transit, 2009. Calculations in "UWS - Elevator Escalator Passenger Metering__031809.xls" Escalator rate based on mezzanine and escalator walking speed of 3 feet/sec Patrons were assumed to stand 2 abreast on one tread followed by 1 person on the next tread followed by 2 abreast then 1 person, in a continuing pattern. Elevator was assumed to operate at two-thirds of its theoretical capacity.

Table 2. Peak Passenger Volumes at University of Washington Station

Condition	Passengers per Hour	Peak Morning Train		Peak Afternoon Train	
		Enter Station	Exit Station	Enter Station	Exit Station
Year 2016 with UW Station as North Terminus [a]	4,730	107	213	213	107
Year 2030 With Northgate as Terminus [a]	5,950	106	278	278	106
Average Passengers per Minute – Year 2030[b]		21	139	56	53
Peak Passengers per Minute – Year 2030[c]		21	218	56	106

a. Source: University of Washington Station Pedestrian and Bicycle Evaluation *(Grijalva Engineering, December 2008). Updated volumes were presented in a separate spreadsheet from Sound Transit (January 11, 2009).*

b. Assumes passengers who enter the station would arrive steadily over the 5-minute period between trains, and that passengers who exit the station would depart within 3 minutes.

c. Assumes that volumes are constrained in practice to an estimated 218 passengers per-minute (198 passengers per minute on the two escalators and 20 passengers per minute in the elevator) delivered by the station's vertical transportation system.

On Street Pedestrian Facility Needs (Crossings and Sidewalks)

The 2010 Proposed Action is expected to decrease the number of pedestrians who cross Montlake Boulevard at-grade compared to the 2006 Alternative (see Table 1). However, the facilities serving these pedestrians—including the crosswalks, sidewalks, and pedestrian queuing islands—will be the same as previously designed. Therefore, no additional impacts to the intersection crossing are expected.

Bridge Width and Level of Service

The 2006 Alternative proposed a 16-foot wide pedestrian bridge[8] that would have extended about 670 feet between the station and Rainier Vista northwest of the Burke Gilman Trail. The 2010 Proposed Action would replace that bridge with a 30- to 34-foot wide bridge that spans 95-feet from the station to the Montlake Triangle.

Pedestrian level of service on each bridge option was rated using Equation 18-2 in the Highway Capacity Manual (TRB, 2000) and assuming the flow rate thresholds in Exhibit 18-3 *Average Flow LOS Criteria for Walkways and Sidewalks*. The peak one-minute surge volumes exiting and entering the station during the morning commuter were evaluated. As previously shown in Table 2, the station would generate a peak surge of 218 passengers per minute exiting the station and 21 passengers per minute entering the station during this period. For the 2006 Alternative, an estimated 66% of these passengers (or 158 per minute) were expected to use the long pedestrian bridge; for the 2010 Proposed Action, an estimated 70% of the passengers (or 168 per minute) are expected to use the short bridge to the Montlake Triangle.

Based on the LOS Criteria, the bridge in the 2006 Alternative would operate at LOS D; the bridge in the 2010 Proposed Action would operate at LOS B. However, the new bridge would be connected to a bicycle ramp that would add traffic to the bridge. It is assumed that a separate bicycle path would be

[8] Per the *Link Contract U250, UW Station Finishes, General Bridge Plan & Elevations, Sheet 1,* Approved Plan, January 15, 2010.

striped on the bridge, so even if bicycle volumes are relatively low during peak passenger surges, the bicycle area on the bridge may not be used by pedestrians. The bicycle area could be 10 to 12-feet wide, and the remaining area reserved for pedestrians (18 to 20 feet) would operate at LOS C. Based on this analysis, the bridge in the 2010 Proposed Action would operate at a better level of service and provide a better facility for bicycles than the 2006 Alternative.

3. Traffic Operations Impacts

Changes proposed as part of the 2010 Proposed Action would not affect the number of trips or passengers generated by the University of Washington Station, nor would it affect traffic patterns in the site vicinity. The number of pedestrians who would cross Montlake Boulevard at-grade is expected to be less than previously assumed for the 2006 Alternative. Therefore, it would not create any additional traffic operational impacts.

Future background conditions in the area are expected to be different than those evaluated in the 2006 FSEIS because of potential changes to the SR 520 Bridge Replacement project. Those potential changes are addressed herein to account for cumulative impacts.

Year 2030 Traffic Volumes

Year 2030 traffic volumes used for this analysis are from the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Supplemental Draft Environmental Impact Statement* (WSDOT, January 2010). For this analysis, two future alternatives were evaluated for SR 520: No Build and Alternative A, which reflects the condition similar to WSDOT's Preferred Alternative.

Changes to Husky Stadium Driveway at Montlake Boulevard/NE Pacific Street Intersection

Sound Transit's 2006 Alternative for the University of Washington Station, which is already under construction on the east side of Montlake Boulevard, will permanently change the east leg of the Montlake Boulevard/NE Pacific Street intersection. The Husky Stadium Parking Lot (also known as the E-11 and E-12 parking lots) was previously accessed from the east leg of this intersection with a northbound right turn or a southbound left turn. Vehicles could also exit the parking lot with a right-turn only onto Montlake Boulevard. This was the configuration assumed in the SR 520 SDEIS. However, when the University of Washington Station is complete, there will be extensive enhancements around the station plaza, and the driveway to the Husky Stadium Parking lot will be reconfigured to "square up" the corner where pedestrians wait to cross Montlake Boulevard. The driveway will be located within the intersection, and movements at the driveway will be signalized to reduce conflicts with pedestrians. Some of these changes have already been made as part of the construction traffic changes near the station. When construction is complete, the signal phase for the exiting movement was assumed to coincide with the eastbound-to-southbound transit-only priority phase. During this phase, it was assumed that westbound vehicles exiting the parking lot could proceed straight across to NE Pacific Street or turn right onto Montlake Boulevard. Per the request of Seattle Department of Transportation (SDOT), the southbound left turn movement to the driveway was assumed to be a protected movement. These changes in intersection configuration and signal operations are approved for use during Sound Transit's construction and were assumed to remain in place for all future conditions.

Changes to the Montlake Boulevard/NE Pacific Place Traffic Volume Assumptions

The 2006 FSEIS had assumed a substantial increase in traffic entering and exiting the parking lot driveway at Pacific Place (serving the E-11/E-12 lots near Husky Stadium). A 66% increase in traffic had been assumed between the 2002 and 2030 No Action condition. The University of Washington has no plans to increase the number of parking spaces in these parking lots, and traffic entering and exiting the parking lots would not change in the future compared to pre-construction conditions.

Changes to the Montlake Boulevard/NE Pacific Place Intersection Signal Phasing

The existing Montlake Boulevard/NE Pacific Place intersection, for which the east leg serves as a driveway to the Husky Stadium parking lots, has unconventional signal phasing. Currently, east-west traffic is processed concurrently; however, westbound traffic exiting the parking lot must yield to oncoming eastbound traffic, even the left turns. This is not a standard yield condition for concurrent signal phasing. In addition, the east-west pedestrian crossing occurs with this phase, and the westbound motorists must also yield to pedestrians in the crosswalk.

The Record of Decision[9] for the project states that, "*The NE Pacific Place/Montlake Boulevard NE intersection would operate at LOS F in the years 2015 and 2030. Adding a second westbound left-turn lane would improve operations to better than No-build conditions. Sound Transit will contribute a proportionate share of costs to improve this intersection.*" Adding a second westbound left turn lane to this intersection would require that the signal phasing be split for east and west movements since otherwise left turn movements would conflict in the center of the intersection. In addition, splitting the signal phasing would eliminate the conflicts between pedestrians in the Montlake Boulevard crosswalk and the westbound left turn movement. It is assumed that the pedestrian crossing of Montlake Boulevard would occur with the eastbound traffic phase. The intersection operations were tested with both the existing signal phasing (and no additional left turn lane) and a split-signal phasing with a dual westbound left turn as recommended in the Record of Decision. As described above and demonstrated later in this report, less growth in traffic is expected than previously forecast at this intersection and no mitigation is required to maintain operations. However, the signal phasing could be changed without reducing the north-south progression along Montlake Boulevard and without degrading operations at this intersection to below a LOS D. The split phasing would improve pedestrian safety as well as reduce queues for vehicles exiting the Husky Stadium parking lot.

Levels of Service

Level of service analysis was performed using *Synchro 7.0* models of the Montlake Boulevard corridor. These models were initially created by WSDOT for the *SR 520 SDEIS*. The models were adapted by Heffron Transportation, Inc. to include changes in features described in this report. These include changes to the Husky Stadium driveway, increased pedestrian volume, and changes in signal phasing. Two conditions were evaluated: the SR 520 No Build, which assumes existing infrastructure at SR 520 would not change, and SR 520 Option A, which would retain the Montlake Boulevard interchange and add a second bascule bridge (draw bridge) on Montlake Boulevard across the Ship Canal. WSDOT's Preferred Alternative for SR 520 incorporates the Option A features.

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[9] *Record of Decision for Central Puget Sound Regional Transit Authority's (Sound Transit) North Link Segment of the Central Link Light Rail Transit Project*, June 2006. Mitigation requirements detailed in Appendix C of the ROD.

Table 3 summarize the level of service results for the SR 520 No Build and SR 520 Option A conditions.

Table 3. Year 2030 Level of Service with Link Light Rail Station

	Without SR 520 Project		With SR 520 Project	
	LOS	Delay	LOS	Delay
AM Peak Hour				
Montlake Blvd/Pacific Street	C	31.9	D	36.1
Montlake Blvd/Pacific Place [1]	A	8.9	A	6.2
PM Peak Hour				
Montlake Blvd/Pacific Street	F	87.5	F	83.6
Montlake Blvd/Pacific Place				
With Existing Phasing	B	18.2	B	16.7
With Dual WB Left and Split Phasing	D	52.1	D	51.2

Source: All levels of service performed using Synchro 7.0. The model was originally developed by WSDOT for the SR 520 Year 2030 No Building condition. All signal timings were optimized, which is consistent with WSDOT's analysis for the SR 520 project.

1. Assumes a change in the signal phasing to split the east and west phases.

2. n/a = not applicable

The 2010 Proposed Action would not change how traffic operates in the site vicinity. It would not increase traffic volumes nor increase pedestrian crossings at intersections. Therefore, no mitigation would be needed to accommodate the project change.

The 2006 FSEIS had determined that the Montlake Boulevard/NE Pacific Place intersection would operate at LOS F in the future, and had recommended adding a second left turn lane to the intersection to mitigate this condition. However, that poor level of service was related to the fact that the analysis had assumed traffic exiting the Husky Stadium parking lots would increase by 66% by the year 2030. The University of Washington has no plans to increase the number of parking spaces in its E-11 or E-12 lots served by this driveway. Therefore, traffic volumes are **not** likely to increase in the future. The proposed mitigation measure would not be needed for the 2006 Alternative or the 2010 Proposed Action.

4. Pedestrian Travel Time Impacts

This section evaluates the walking times associated with the two alternatives: the original pedestrian bridge in the 2006 Alternative, and the new pedestrian bridge in the 2010 Proposed Action. As previously shown on Figure 3, there are three key destinations that would be used by an estimated 92% of the station patrons:

- **Central campus**, which represents areas north and west of the Burke-Gilman Trail. An estimated 38% of the Link passengers would be destined areas in the Central Campus (33% towards Drumheller Fountain and the Burke-Gilman trail, and 5% to the Hec Edmundson Bridge). The travel time for these patrons was estimated for routes between the station and Drumheller Fountain.

- **UW Medical Center and southern Health Sciences**, which represents the large complex of buildings south of NE Pacific Street. An estimated 29% of the Link passengers would be destined to this complex. The travel time for these passengers was estimated for two routes: 1) between the station and the main entrance of the UW Medical Center, and 2) to the Health Sciences entrance at the T-Wing Pedestrian Bridge. Those walking to the Health Sciences building could choose to walk along NE Pacific Street or walk towards main campus and use the Burke-Gilman Trail to the T-Wing Overpass. Those walking to the UW Medical Center could also opt to take the stairs into the Triangle Garage and take the tunnel under NE Pacific Street.

- **Transit transfers** on the Montlake Triangle. An estimated 30% of the Link passengers are expected to transfer to or from buses in the Montlake Triangle area—25% at stops on the inside of the Montlake Triangle and 5% on the south side of NE Pacific Street. This is a conservatively high estimate based on the University of Washington station as interim end-of-line, when about one quarter of the bus transfer activity would be to transport riders to the University District commercial area or other nearby neighborhoods. Once Link is extended north, these passengers would continue on the train to the Brooklyn Station or other station further north. Most of the regional and local buses have stops on NE Pacific Street. Two frequent local bus routes serve passengers on NE Pacific Place and lay over at the end of their route.

Walking times were calculated between the station and the key destinations on campus. The methodology to determine the walking times is documented below.

Walking Time Methodology

Walking time between the station plaza and the end destination includes the following components:

- **Time to walk the distance between the two end points –** For this analysis, a moderate walking speed of 5 feet per second was used (equivalent to about an 18-minute mile and less than 3.5 mph).[10] This speed is higher than the 3.5 to 4-feet-per-second speed that is used to set minimum signal times at intersections, and reflects the fact that many students will walk faster. The distances between the street-level station access and the end points were measured from detailed drawings of the three alternatives as well as campus maps.

- **Time on the escalator** – For walking routes that use the pedestrian bridge, patrons would need to ascend or descend between the pedestrian bridge and street level. (The travel time to the platform was not included since that would be the same for all walking routes.) Sound Transit's station design specifies an escalator speed of 100 feet per minute; and the

[10] Slower walking speeds of 3.5 to 4.0 feet per second (fps) are used to determine the minimum crossing times at signalized crosswalks. However, these speeds are below average, and reflect the needs of slower pedestrians such as senior citizens. Two studies that have reported the walking speeds of younger pedestrians were used to determine the average walking speed appropriate for the University of Washington campus population: 1) *Field Studies of Pedestrian Walking Speed and Start-Up Time* (Knoblauch, Pietrucha, and Nitzburg, Transportation Research Record 1538, 1996; and 2) *Transportation Research Record #1678* (Milazzo, Rouphail, Hummer, and Allen, 1999. The 1996 study determined that for younger pedestrians, the mean speed was 4.95 feet per second. The 1999 study cited that the average walking speeds was 5.7 fps for young pedestrians, 4.9 fps for middle-aged pedestrians, and 3.8 fps for elderly pedestrians.

length of the escalator is designed to be 44 linear feet. Therefore, the travel time on the escalator is estimated to be about 26 seconds.

- **Time to cross Montlake Boulevard** – For travel routes that would cross Montlake Boulevard at-grade, pedestrians would need to wait for the pedestrian signal to cross the street. The average wait time was calculated using Equation 18-5 from the *Highway Capacity Manual* (Transportation Research Board, 2000). The equation relates the average pedestrian delay to the cycle length and the amount of green time provided for the pedestrian crossing. The calculation determines the average wait time for a pedestrian who has arrived at the signal when the "Don't Walk" phase is in effect. This includes pedestrians who arrive just when the light changes to "Don't Walk" as well as those who might arrive when the signal shows "Walk" and they have no delay. The cycle lengths and pedestrian walk phase times were determined from existing signal operations. Currently, the corridor operates with a 110 second cycle length in the morning and a 120 second cycle length in the afternoon. Pedestrians crossing Montlake Boulevard are provided with 27 seconds of crossing time. With these signal timing parameters, the average delay per pedestrian is 31 seconds in the morning and 36 seconds in the afternoon. WSDOT's analysis for year 2030 conditions with the SR 520 Preferred Alternative (including the second Bascule Bridge on Montlake Boulevard) optimized the signal timings. That analysis found that overall cycle lengths could decrease in the future with SR 520, and could range from 90 to 100 seconds, while maintaining or extending the pedestrian green time. Under this future scenario, the average delay per pedestrian would be less. Therefore, to be conservative, the existing pedestrian delays at these signals were assumed for this analysis.

- **Time to cross Pacific Street**– Some of the routes would require passengers to cross NE Pacific Street at one of three locations: 1) at the Montlake Boulevard intersection, 2) at the Pacific Place intersection, or 3) at a future pedestrian crossing at the UW Medical Center driveway, which is part of a separate action. Crossing delay for both was determined using the same methodology as described above. At Montlake Boulevard, the time allotted to north-south movements is long, and the time that a pedestrian would need to wait to cross Pacific Street is shorter than to cross Montlake Boulevard. It is estimated that the average delay for pedestrians would be 10 seconds. Further west, the Pacific Street/Pacific Place intersection operates with a cycle length that is half the time of cycle lengths on Montlake Boulevard. Delay to cross Pacific Street at this location is estimated to be 9 seconds. Delays for a potential future signal were assumed to be 10 seconds.

Pedestrian Travel Times

Figures 4 through 6 summarize the pedestrian travel times associated with the various routes described above. Detailed calculations showing the delay for various segments of each trip are provided in Appendix A.

Figure 4. Walking Routes and Travel Times between Station Plaza and Drumheller Fountain

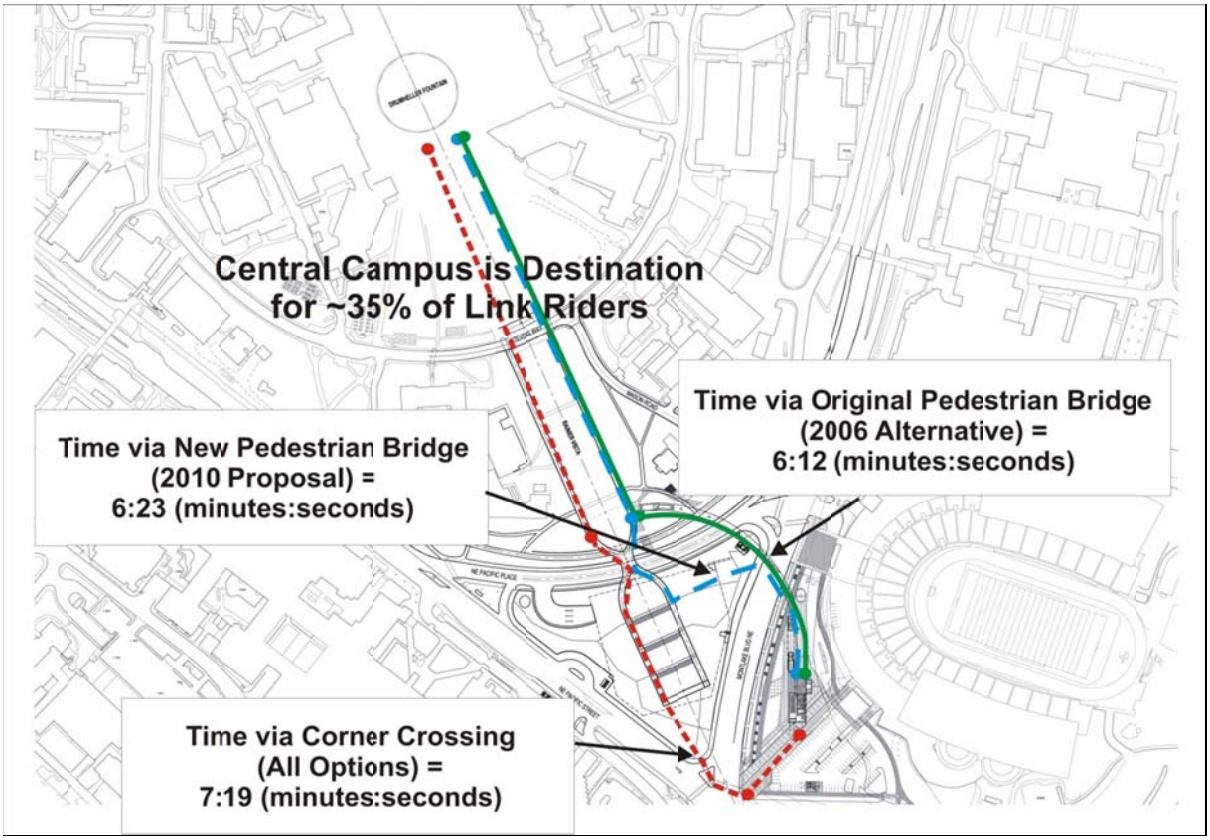


Figure 5. Walking Routes and Travel Times between Station Plaza and UW Medical Center

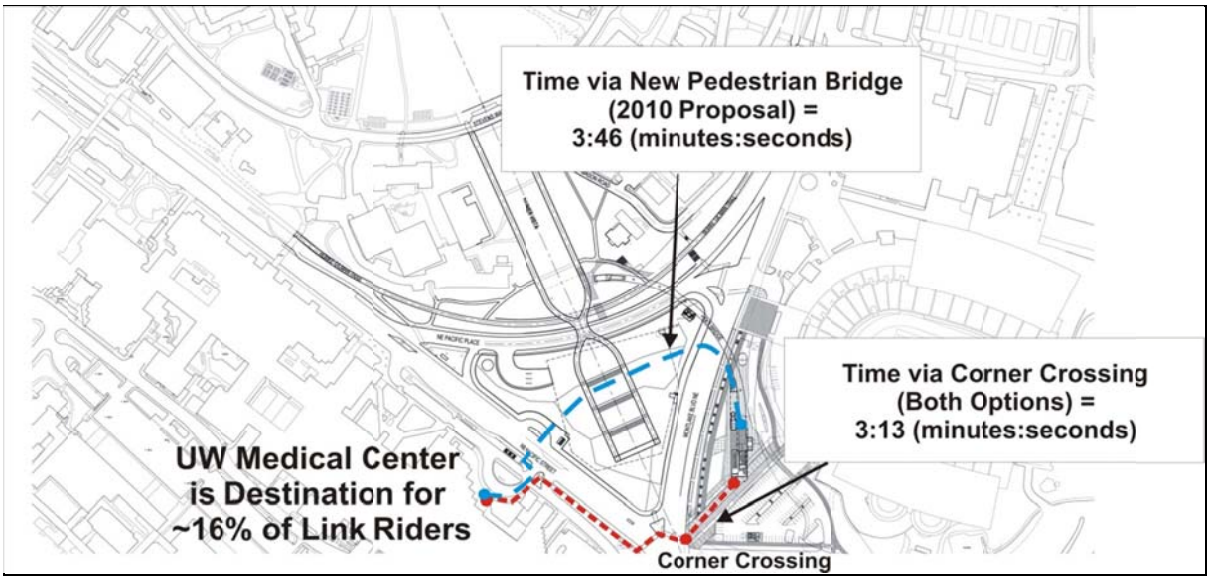
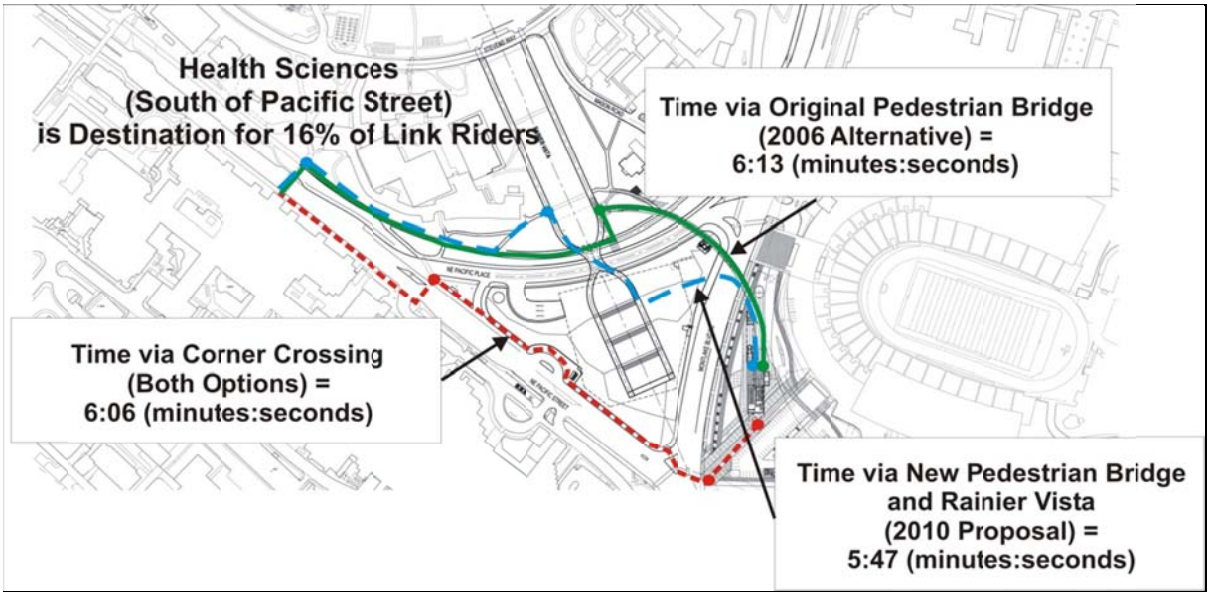


Figure 6. Walking Routes and Travel Times between Station Plaza and Health Sciences



The pedestrian travel time analysis shows that the 2006 Alternative would have the fastest walking times to the fountain, about 11 seconds faster than the 2010 Proposed Action. However, for passengers destined to the Health Sciences complex, the 2010 Proposed Action would provide a faster route, about 26 seconds faster than the route via the original pedestrian bridge proposed as part of the 2006 Alternative and 19 seconds faster than the surface route via NE Pacific Street. Travel times to the UW Medical Center would be the same for both options with the surface route (crossing at the corner of the Montlake Boulevard/NE Pacific Street intersection) being the fastest. The new pedestrian bridge with the 2010 Proposed Action would offer a reasonable alternative route across Rainier Vista to a future mid-block crossing of NE Pacific Street. Walking time between the Light Rail Station and bus transfer points would be identical for the two options.

5. Safety

Both the 2010 Proposed Action and the 2006 Alternative would grade-separate station patrons from Montlake Boulevard, NE Pacific Place, and the Burke-Gilman Trail. However, the 2010 Proposed Action, with Rainier Vista, would also grade separate non-station pedestrian and bicycle traffic from both NE Pacific Place and the Burke-Gilman Trail. Existing unsignalized crossings of NE Pacific Place and the Burke-Gilman Trail at Rainer Vista would be eliminated by the 2010 Proposed Action. Therefore, the 2010 Proposed Action would enhance safety compared to the 2006 Alternative.

6. Burke-Gilman Trail Impacts

The 2006 Alternative included a grade-separated pedestrian crossing of Montlake Boulevard, via a tunnel or bridge, with an option for an extended tunnel or bridge across NE Pacific Place and the Burke-Gilman Trail to provide access to the Rainier Vista corridor and central campus. Due to concerns about increased volumes of pedestrians arriving by Link light rail and then crossing the Burke-Gilman Trail to access campus, Sound Transit and FTA committed to developing a grade-separated crossing of the trail and NE Pacific Place, via either a tunnel or bridge, to maintain connectivity between the University of Washington Station and the campus. This mitigation measure is documented in the project's *Record of Decision.* It stated,

> *At the University of Washington Station, Sound Transit will continue to work with local agencies (KCM, WSDOT, SDOT, and the University of Washington) to identify University of Washington Station design features to accommodate the increase in pedestrians associated with North Link. Design improvements such as reduced speed limit signs for bicycles, distinctive paving, or other improvements to enhance visibility and slow bicycle travel speeds along the Burke-Gilman trail in this area will be implemented as necessary to reduce the likelihood of bicycle/pedestrian collisions. An unsignalized or signalized midblock crossing of NE Pacific Place will be provided to help balance transportation needs. A station entrance or access point will be located to the north of NE Pacific Place and the Burke-Gilman Trail with an extended pedestrian passageway under or over NE Pacific Place and the Burke-Gilman Trail.*

The 2006 Alternative met this mitigation requirement with the pedestrian bridge extending from the UW Station to the Rainier Vista on the north side of NE Pacific Place and the Burke-Gilman Trail. Pedestrians destined to areas in Southwest campus, including Health Sciences, are likely to then use the Burke-Gilman Trail as their primary path between the end of the bridge and their destination. The key constraint on the existing Burke-Gilman Trail is the width of the bridge that crosses over the trenched roadway on Rainer Vista. The trail is currently 11-feet wide across the bridge, and the effective width is even narrower because there are railings on both sides. The 2010 Proposed Action eliminates this bridge and replaces it with the reconstructed Rainier Vista and connecting paths.

The Burke-Gilman Trail in the vicinity of the land bridge would be improved to grade-separate the Burke-Gilman Trail from Rainier Vista. Through the project area, the Burke-Gilman Trail would be widened to provide a 14-foot wide pedestrian and bicycle path. Two-foot wide gravel shoulders would be provided at the edges of the path. Design of the trail would not preclude future widening by the University for a total trail width of 30-feet. A new trail would be constructed parallel to the new NE Pacific Place under the land bridge, although the elevation of the trail would be above the roadway to minimize the grades on the trail. Two connecting paths would be provided linking the Burke-Gilman Trail with Rainier Vista. The University is analyzing further Burke Gilman Trail improvements beyond this area. Until then, the new trail section would need to transition both in grade and alignment to meet the existing trail section. On the north side of the project area, that transition should occur north of the proposed connecting path to the Rainier Vista. On the southwest side of the project area, the transition should occur west of where the trail that links to the NE Pacific Place/NE Pacific Street intersection is located.

The point on the Burke-Gilman Trail where the potential intersecting volumes would be the highest would be located southwest of the land bridge, along the route to Southwest campus. The volume is expected to be lower for the 2010 Proposed Action than for the 2006 Alternative because the new alternative provides additional routes to NE Pacific Street from the Montlake Triangle. The same treatments are proposed for both alternatives where connecting paths intersect the Burke-Gilman Trail. This includes stop signs and bicyclist lean rails at the paths that intersect the Burke-Gilman Trail; through traffic on the trail would not stop. No additional mitigation measures would be required for the 2010 Proposed Action.

In the future, the new bicycle path across Lake Washington on the SR 520 bridge is expected to further increase bicycle volumes in the Montlake Triangle area and along the Burke-Gilman Trail. This increase would occur without or with the 2010 Proposed Action. Although this volume is not expected to degrade operations for the trail segment under Rainier Vista some additional width for merging or to separate bikes and pedestrians may be desired at and west of the connecting path to improve operations and trail safety.

The 2010 Proposed Action would address all of the Record of Decision requirements. It would reduce the potential for bicycle/pedestrian collisions by separating the Link pedestrian flows from the Burke-Gilman Trail, it would provide adequate width on the Burke-Gilman Trail to accommodate future demand, and it would eliminate the mid-block crossings on NE Pacific Place.

7. Transit Impacts

Both King County Metro and Sound Transit provide frequent transit service to the Montlake Triangle with twelve Metro bus routes and three Sound transit bus routes. Combined, the twelve Metro routes provide over 30,000 rides each day or over eight million rides per year. During the week, over 180 buses travel through the Montlake corridor in the morning peak period. In the Montlake Triangle and immediate surroundings, over 1,400 people board buses and over 1,200 people alight from buses each day. Three of Metro's most popular bus routes use this corridor: Routes 43, 44, and 48. According to 2009 data, each of these routes provides between 5,000 and 6,000 rides per day. The number of riders who use buses is expected to increase in the future with transfers to and from the Sound Transit University of Washington Link Station. The Sound Transit 2006 FSEIS predicted that the number of Link passengers who transfer to bus transit at this station would be 3,760 during the three-hour peak period.[11]

As part of the planning for the SR 520 Bridge Replacement Project, the state legislature directed WSDOT to develop a High Capacity Transit (HCT) Plan in coordination with key transit agencies as well as the University of Washington.[12] The HCT Plan refers to the "Montlake Multimodal Station," which encompasses the three streets of the Montlake Triangle as well as the University of Washington Link Station. One of the issues addressed by the HCT plan is the change in transit operations that would be needed when the existing Montlake Flyer stop (the transit stop on SR 520 at Montlake Boulevard) is eliminated. The HCT Plan identified the need to expand the two existing bus stops on NE Pacific Place east of NE Pacific Street by 220 feet each. It also recommended creating two zones at each stop: one for local routes and one for regional routes and it identified the need for additional bus layover space on NE Pacific Place.

The 2010 Proposed Action would increase the transit layover area located along the lowered NE Pacific Place and extend under the Rainier Vista land bridge. The curb lane available for transit would be extended from about 220 feet in 2006 Alternative design to 390 to 420 feet with the 2010 Proposed Action. Buses parked in this space would be out of the Rainier Vista View corridor. Increased layover capacity was not provided in the 2006 Alternative since an extension of the existing layover space would have located buses too close to the mid-block pedestrian crosswalks on NE Pacific Place and/or within the Rainier Vista view corridor.

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[11] Sound Transit, North Link Supplemental Final Environmental Impact Statement, April 2006. Table 5.4-1b in the Transportation Technical Report.

[12] WSDOT, Sound Transit, King County Metro and the University of Washington, *SR 520 High Capacity Transit Plan*, December 2008.

8. Mitigation

Mitigation measures for potential transportation-related impacts were identified in the 2006 FSEIS and in the 2006 NEPA ROD. Those that are in the vicinity of the University of Washington Station are listed in Table 4. The 2010 Proposed Action would satisfy all of the transportation requirements as detailed in the table.

Table 4. Transportation Mitigation Measures from Record of Decision

Mitigation Measures in North Link Record of Decision for the 2006 Alternative[1]	How the 2010 Proposed Action would meet with ROD requirements
The NE Pacific Place/Montlake Boulevard NE intersection would operate at LOS F in the years 2015 and 2030. Adding a second westbound left-turn lane would improve operations to better than No-build conditions. Sound Transit will contribute a proportionate share of costs to improve this intersection.	Intersection is not degraded based on current traffic growth forecasts; mitigation is not required for the 2006 Alternative or 2010 Proposed Action. *However, adding the second westbound lane with split phasing would reduce conflicts with pedestrians in the crosswalks and have other benefits.* This intersection is expected to operate at LOS D or better with either lane configuration or signal phasing option.
At the University of Washington Station, Sound Transit will continue to work with local agencies (KCM, WSDOT, SDOT, and the University of Washington) to identify University of Washington Station design features to accommodate the increase in pedestrians associated with North Link. Design improvements such as reduced speed limit signs for bicycles, distinctive paving, or other improvements to enhance visibility and slow bicycle travel speeds along the Burke-Gilman trail in this area will be implemented as necessary to reduce the likelihood of bicycle/pedestrian collisions. An unsignalized or signalized midblock crossing of NE Pacific Place will be provided to help balance transportation needs. An unsignalized or signalized midblock crossing of NE Pacific Place will be provided to help balance transportation needs. A station entrance or access point will be located to the north of NE Pacific Place and the Burke-Gilman Trail with an extended pedestrian passageway under or over NE Pacific Place and the Burke-Gilman Trail.	The proposed Rainier Vista land bridge would grade-separate the Burke-Gilman Trail from station pedestrian crossings and includes features to prioritize through traffic at the new trail intersections. It would also eliminate the mid-block crosswalks on NE Pacific Place. No further mitigation would be needed.
In the vicinity of the south station entrance, Sound Transit will provide sufficient facilities for pedestrian storage and capacity by improving and widening the crosswalks across Montlake Boulevard NE and NE Pacific Street, and providing sufficient pedestrian storage capacity on either the existing refuge/traffic island or the south end of the Montlake Triangle.	Crosswalk widths proposed for the 2006 Alternative are sufficient for the 2010 Proposed Action. No further mitigation would be required.

Source: Record of Decision for Central Puget Sound Regional Transit Authority's (Sound Transit) North Link Segment of the Central Link Light Rail Transit Project, June 2006. Mitigation requirements detailed in Appendix C of the ROD.

9. Construction Impacts

Traffic Management During Construction

Sound Transit would manage all construction for the 2010 Proposed Action, including construction of the new pedestrian bridge, lowering of NE Pacific Place, and construction of the Rainier Vista Land Bridge. This will reduce potential construction-related conflicts.

The contractor selected for the project will be required to prepare two traffic-related plans in advance of construction within the public street right of way:

- Traffic Management Plan (TMP) – This is a written plan that will describe how all modes of traffic will be managed during construction.
- Maintenance of Traffic (MOT) Plan – This will detail the location of cones, signs, traffic flaggers, police-officer control, and other elements used to control traffic during construction.

The TMP and MOT plans would be approved by Sound Transit, the University of Washington, and if a street use permit is required, the Seattle Department of Transportation. These plans would address the following:

- Maintenance of vehicular traffic when there are changes made to any existing lane configurations, traffic flow, or traffic control.
- Maintenance of pedestrian and bicycle traffic that uses the Burke-Gilman Trail, sidewalks along Pacific Place, and connections to these facilities.
- Maintenance of transit routes, transit stops, and layover facilities, particularly the electric trolley routes that use Pacific Place.
- Emergency vehicle access to the University Medical Center.
- Access to the Triangle Parking Garage. Two-way access on Pacific Place between Pacific Street and the garage driveway must be maintained at all times.
- Replacement of bus staging locations if Pacific Place is not available during Husky Football games.
- Coordination with construction and maintenance of the SDOT approved haul routes for the University of Washington Link Light Rail Station adjacent to Husky Stadium.

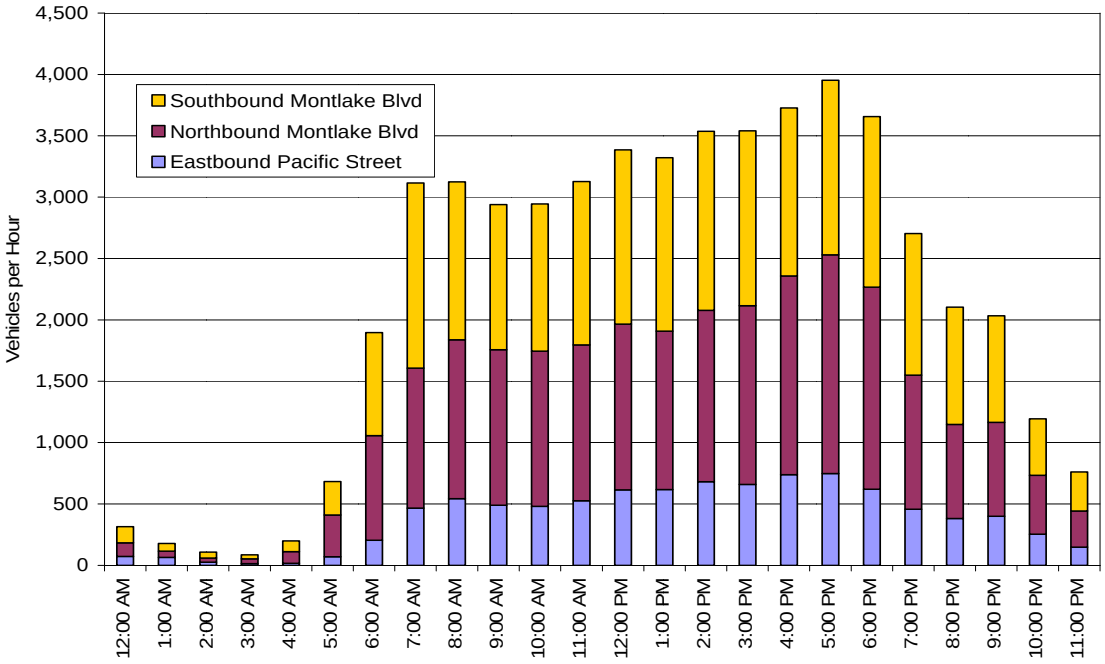
Construction Closures of NE Pacific Place

Constructing the 2010 Proposed Action will require lowering NE Pacific Place. This may result in partial or full closures of NE Pacific Place. The potential effect of closing this street on the operations of the surrounding streets was evaluated. The details are presented below.

Traffic flow around the Montlake Triangle would likely require that northeast-bound traffic be maintained on NE Pacific Place during daytime hours. This direction of travel cannot easily be diverted to the vicinity streets because eastbound-to-northbound left-turns are not allowed at the Montlake Boulevard/NE Pacific Street intersection, and adding this movement during daytime hours could increase congestion through the intersection. In addition, King County Metro trolleys circle the Montlake Triangle in a clockwise direction, and the existing trolley wires use the northeast-bound travel lanes of NE Pacific Place. However, as described below, it may be possible to fully close NE Pacific Place at night and reroute that traffic using police-officer control at the Montlake Boulevard/Pacific Street intersection.

Hourly traffic volumes for the vicinity streets were obtained from the Seattle Department of Transportation (SDOT). Figure 7 shows the traffic volumes that enter the Montlake Boulevard/Pacific Street intersection during each hour of the day.

Figure 7. Existing Weekday Traffic Volumes
at Montlake Boulevard/NE Pacific Street Intersection



Source: 7-day traffic counts performed by Seattle Department of Transportation (SDOT), October 7, 2009 through October 13, 2009. Data for weekend days were excluded.

The above chart shows that traffic volume during the overnight hours—from 8:00 P.M. until about 6:00 A.M.—is much lower than traffic during the daytime hours. In fact, even the highest level of overnight traffic (during the 8:00 P.M. hour) is about half of the level of traffic during the commuter peak hour.

Traffic operations analysis was performed for the 8:00 P.M. hour to determine if all traffic from NE Pacific Place could be detoured to other streets. Providing this detour would require the following:

- Traffic from northeast-bound Pacific Place would be detoured east on Pacific Street and then north on Montlake Boulevard. This would require temporary coning to provide for an eastbound-to-northbound left turn at the Montlake Boulevard/Pacific

Street intersection. This lane was assumed to be converted from one of the eastbound right-turn lanes. The detour would also require police-officer control of the intersection since the existing traffic signal has no signal head for this movement.

- Traffic from southwest-bound Pacific Place would be detoured south on Montlake Boulevard and then west on Pacific Street. This traffic would be a southbound right turn at the Montlake Boulevard/Pacific Street intersection, a move that is already allowed at this intersection so no physical or operational changes would be required.

Intersection turning movement volumes for the 8:00 P.M. hour were estimated from PM peak period turning movement counts, and the 24-hour counts detailed in Figure 7 above. Then traffic that would be diverted from NE Pacific Place (also during the 8:00 P.M. hour) was added to the Montlake Boulevard/Pacific Street intersection. In addition, Sound Transit's construction on the east side of Montlake Boulevard generates truck traffic that is allowed to turn left directly to southbound Montlake Avenue during nighttime hours only (10:00 P.M. to 7:00 A.M. weekdays). This traffic and a corresponding signal phase were included in the analysis for the 8:00 P.M. hour even though left turns are not currently permitted by SDOT until later, which is a worst-case condition. With the changes in intersections operations, lane configuration, police-officer control, plus the additional detoured traffic, the intersection is expected to operate at LOS C during the 8:00 P.M. hour.[13] Operations would likely be better later at night when traffic volumes are even lower.

Therefore, from a traffic operations standpoint, it would be possible to fully close NE Pacific Place during nighttime hours during construction. If the selected contractor chooses to close the street, the following measures and protocols should be required:

Measures required to implement a full closure of NE Pacific Place during nighttime hours

- Obtain approval from King County Metro to alter nighttime service that now uses NE Pacific Place. Depending on the closure times, King County Metro may need to alert riders, alter routes, and/or change equipment from electric trolley to diesel buses.

- Obtain approval from the Seattle Department of Transportation (SDOT) to close the street, which may require a street-use permit.

- Secure police-officer control for the Montlake Boulevard/Pacific Street intersection. The Seattle Police Department would determine if one or two officers are needed.

- Include proposed detour routes, signage and coning in the contractor's required Traffic Management Plan (TMP) and Maintenance of Traffic (MOT) plans. Coning on Pacific Street would be needed to channelized an eastbound left-turn lane. This lane would be converted from one of the two general-purpose right-turn lanes.

- Use police-officer control of the Montlake Boulevard/Pacific Street intersection with the following phasing:

[13] Level of service was estimated using Synchro 7.0 models for existing conditions that had been developed by WSDOT for the SR 520 project. These models were used to emulate operation with police officer control for nighttime conditions with a full closure of NE Pacific Place.

- Northbound + southbound thru movements
- Eastbound left turn + westbound left turn (dump trucks exiting the Sound Transit portal are allowed to turn left at night only).
- Northbound left turn and eastbound right turn only plus the pedestrian crossing of Montlake Boulevard.

A full-time closure of the southwest-bound direction only of NE Pacific Place was also evaluated. As described above, traffic from southwest-bound Pacific Place would be detoured south on Montlake Boulevard and then west on Pacific Street. This detoured traffic would make a southbound right turn at the Montlake Boulevard/Pacific Street intersection, a move that is already allowed at this intersection so no physical or operational changes would be required. The effect of this full-time, one-direction closure was evaluated to determine how additional traffic would affect operations during the peak commute hours. Table 5 summarizes existing traffic operations with and without the detoured southwest bound traffic.

Table 5. Effect of Detouring Traffic from Southwestbound Pacific Place

	Montlake Blvd/Pacific Pl		Montlake Blvd/Pacific St		Pacific St/Pacific Pl	
Condition	LOS [1]	Delay [2]	LOS	Delay	LOS	Delay
AM Peak Hour						
Existing (2008)	A	9.2	C	21.4	B	18.6
With Detour for SW-bound Pacific Pl[3]	B	11.5	C	21.3	C	23.7
PM Peak Hour						
Existing (2008)	B	17.1	C	25.1	C	23.3
With Detour for SW-bound Pacific Pl[3]	B	17.8	C	23.8	C	26.1

Source: Heffron Transportation, February 2010. All levels of service reflect the HCM methodology from the Synchro 7.0 software.

1. *LOS = Level of service.*
2. *Delay = Average delay reported in seconds per vehicle.*
3. *Assumes that southwest-bound traffic on NE Pacific Place would be detoured south on Montlake Boulevard and then west on NE Pacific Street.*

As shown above, detouring traffic from southwest-bound Pacific Place would add very little delay to the three intersections around the Montlake Triangle. At the Montlake Boulevard/NE Pacific Street intersection, the detoured traffic would be added to the southbound right turn movement. However, this movement has very little traffic now, and is not a critical movement for intersection operations. The southbound right turn would operate at LOS A during the AM or PM peak hour with the detoured traffic. Therefore, this partial closure could occur at any time of day without affecting traffic operations. It is recognized that this detour would increase traffic across the corner pedestrian crossing (between the pedestrian island and the Montlake Triangle). In order to implement this closure, the following measures would be required:

Measures required to close southwest-bound NE Pacific Place:

- Obtain approval from the Seattle Department of Transportation (SDOT) to close the street, which may require a street-use permit.

- Include proposed detour routes, signage and coning in the contractor's required Traffic Management Plan (TMP) and Maintenance of Traffic (MOT) plans.

- Work with SDOT and King County Metro to extend the general-purpose vehicle access into the southbound curb lane on Montlake Boulevard approaching NE Pacific Street. Most of this lane is now restricted to transit only, and general-purpose traffic is allowed to enter the lane at the far south end. During construction only, an extension of the general-purpose lane should be considered.

Construction of New Bridge Across Montlake Boulevard

The method for constructing the new pedestrian bridge across Montlake Boulevard is not yet determined. When completed, the bridge would clear-span the roadway. However, it is possible that bridge construction could require temporary supports or "falsework" in the middle of the span that could affect through traffic lanes on Montlake Boulevard.

The following is required for any construction affecting traffic flow or pedestrian/bicycle facilities on Montlake Boulevard:

- A MOT plan detailing channelization and signage that would be used to route traffic around the obstruction.

- The MOT plan must retain two through lanes in each direction on Montlake Boulevard during peak traffic hours (7:00 A.M. to 10:00 P.M.) At night, additional lane restrictions (e.g., one lane in each direction and/or alternating flow with flagger control) could be considered if analysis shows that traffic flow needs could be accommodated.

- The MOT plan must retain a pedestrian and bicycle path on the east side of the street.

APPENDIX A
PEDESTRIAN TRAVEL TIME ANALYSIS

UW Station Pedestrian Access
Pedestrian Travel Times

Trip Ends	Route: 2006 Alternative ST Pedestrian Bridge	Route: Via 2010 Proposal New Bridge + Rainier Vista	Route: via Pacific St/Montlake Blvd intersection
Station Plaza to Drumheller Fountain	06:12	06:23	07:19
Station Plaza to UW Med Center Entry	Not measured*	03:46	03:13
Station Plaza to Health Sciences at T-Wing Bridge	06:13	05:47	06:06
Station Plaza to Pacific Street Tunnel Stair	Not measured*	02:56	02:43

* - Route would be out-of-direction and was not measured

UW Station Pedestrian Access
Pedestrian Travel Times

Assumptions:

Walking Rate	5 feet per second
Escalator Rate	100 feet per minute
Crossing Delay at Montlake Blvd and Pacific St	Assumes a 110 second cycle consistent with existing signal times

Travel Time from Station Plaza to Drumheller Fountain (see Figure 4 in Technical Memorandum)

Via Pedestrian Bridge (2006 Alternative)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
Escalator to Bridge	44	26	
Average crossing delay at Montlake Blvd		0	
Long Bridge To Rainier Vista	670	134	
From Rainier Vista to Drumheller Fountain	1060	212	
Total Time		372	06:12

Via Pedestrian Bridge (2010 Proposal)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
Escalator to Bridge	44	26	
Average crossing delay at Montlake Blvd		0	
Short Bridge To Rainier Vista	450	90	
From Rainier Vista to Drumheller Fountain	1335	267	
Total Time		383	06:23

Via Corner Crossing at Montlake Blvd/Pacific Street Intersection (Both Options)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
From Head House to Montlake Blvd/Pacific Street	200	40	
Average crossing delay at Montlake Blvd		31	
From Montlake Blvd to Rainier Vista northwest of BG Trail	780	156	Measured from the east curb
From Rainier Vista to Drumheller Fountain	1060	212	
Total Time		439	07:19

UW Station Pedestrian Access
Pedestrian Travel Times

Assumptions:

Walking Rate	5 feet per second
Escalator Rate	100 feet per second
Crossing Delay at Montlake Blvd & Pacific St	Assumes a 110 second cycle consistent with existing signal times

Travel Time from Station Plaza to UW Medical Center Main Entry - Via Surface Routes (See Figure 5)

Via Pedestrian Bridge (2010 Proposal)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
Escalator to Bridge	44	26	
Average crossing delay at Montlake Blvd		0	
Short Bridge To Rainier Vista & Pacific Street	750	150	
Average crossing delay at Pacific Street Xwalk		10	
From Pac St North Curb to Front Door of Med Center	200	40	
Total Time		226	03:46

Via Corner Crossing at Montlake Blvd/Pacific Street Intersection (All Options)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
From Head House to Montlake Blvd	200	40	
Average crossing delay at Montlake Blvd Xwalk		31	
Average crossing delay at Pacific Street Xwalk		10	
From Pac St Island to Front Door of Med Center	560	112	
Total Time		193	03:13

UW Station Pedestrian Access
Pedestrian Travel Times

Assumptions:

Walking Rate	5 feet per second
Escalator Rate	100 feet per second

Travel Time from Station Plaza to Pacific Street Tunnel (North Entrance)

Via Pedestrian Bridge (2010 Proposal)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
Escalator to Bridge	44	26	
Average crossing delay at Montlake Blvd		0	
Short Bridge To Rainier Vista & Pacific Street	750	150	
Average crossing delay at Montlake Blvd Xwalk		0	
From East side of Pacific to Tunnel Stair (cut across tip of Triangle)	0	0	
Total Time		176	02:56

Via Corner Crossing at Montlake Blvd/Pacific Street Intersection (Both Options)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
From Head House to Montlake Blvd	200	40	
Average crossing delay at Montlake Blvd Xwalk		31	
From East Side of Montlake to Tunnel Stair	460	92	
Total Time		163	02:43

UW Station Pedestrian Access
Pedestrian Travel Times

Assumptions:

Walking Rate	5 feet per second
Escalator Rate	100 feet per second
Crossing Delay	Assumes a 110 second cycle for Montlake intersections consistent with existing signal times
	Signal at Pacific Street/Pacific Place has a 55 second cycle length

Travel Time from Station Plaza to T-Wing Bridge at Health Sciences (See Figure 6)

Via Pedestrian Bridge and Burke-Gilman Trail (2006 Alternative)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
Escalator to Bridge	48	29	
Average crossing delay at Montlake Blvd		0	
Ped Bridge From Station Headhouse To Rainier Vista	670	134	
From Rainier Vista to T-Wing Bridge	950	190	
T-Wing to Health Sciences Entry	100	20	
Total Time		373	06:13

Via Pedestrian Bridge (2010 Proposal)	Distance (feet)	Travel Time (sec)	Travel Time (min:sec)
Escalator to Bridge	44	26	
Average crossing delay at Montlake Blvd		0	
Short Bridge To Rainier Vista	450	90	
From Bridge End to Rainier Vista connection to BG Trail	325	65	
From Rainier Vista to T-Wing Bridge via B-G Trail	730	146	
T-Wing to Health Sciences Entry	100	20	
Total Time		347	05:47

Via Corner Crossing at Montlake Blvd/Pacific Street Intersection, Pacific Street & Burke-Gilman Trail (Both Options)	Distance (feet)	Travel Time (sec)	
From Head House to Montlake Blvd	200	40	
Average crossing delay at Montlake Blvd		31	
From Montlake to Pacific Place via Pacific Street	900	180	
Average crossing delay of Pacific Place		5	
From Pacific Place to T-Wing via Burke Gilman	470	94	
T-Wing to Health Sciences Entry	100	20	
Total Time		370	06:10

Via Corner Crossing at Montlake Blvd/Pacific Street Intersection, Pacific Street to Signal at Pacific Place to South side of Street (Both Options)	Distance (feet)	Travel Time (sec)	
From Head House to Montlake Blvd	200	40	
Average crossing delay at Montlake Blvd		31	
From Montlake to Pacific Place via Pacific Street	900	180	
Average crossing delay of Pacific Street		9	
From Corner to Entry via South side of Pacific Street	530	106	Includes crossing distance of Pacific St
Total Time		366	06:06